

THE ROLE OF ECONOMIC INFORMATION IN  
CONSUMERS' SHOPPING FOR DURABLES

By

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19<sup>90</sup>

To my parents, Barbara and Gerald Marmorstein,  
for giving me the joy of learning.

To my parents-in-law, Eleanor and Allen Ross,  
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To my wife, Madeline, for everything.

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This study focuses upon the extent of consumers' search for price information and the effect of this search on consumers' purchase outcomes. An integrative conceptual framework for explaining consumers' search behavior and purchase outcomes is proposed and tested. This framework builds upon the fundamental tenets of economics of information theory. It also draws upon behavioral decision theory in an attempt to explain the variation in, and the low mean level of, pre-purchase search behavior which has been observed in previous research.

In order to address a set of issues, pertinent to marketing and central to economic theory, this study employed a two stage survey approach. Consumers who were actively shopping for the target products, but had not yet bought, were first interviewed as they exited the cooperating retail stores. They were then given a second questionnaire to complete and return by mail following the actual purchase.

Among the noteworthy findings were the following. On average, consumers proved to be reasonably adept at estimating the market price dispersion of their preferred appliance models. Their estimates of the price dispersion were directly related to the extent of their search for price information. Also in accord with economics of information theory was the finding that the extent of consumers' price search was negatively correlated with their wage rates. More interesting was the finding that consumers' subjective opportunity cost of search was substantially higher than the normative value implied by economic theory. In addition, consumers' subjective cost of search excelled over the wage rate as a predictor of search behavior. Consumers' purchase outcomes did not vary as greatly as expected. Evidently, most consumers have learned that appliances are usually available at "sale" prices. This enables consumers to sample primarily from the lower end of the price distribution and achieve satisfactory purchase outcomes without extensive price comparison shopping.

The implications of these findings are discussed and directions for future research are specified.

## CHAPTER I INTRODUCTION

### Overview

The nature and extent of consumers' shopping for durable goods are of great interest to marketing managers, public policy-makers and consumer educators. Thus, it is not surprising to find that a continuing stream of marketing research provides a rich description of consumers' search activities. However, several attempts to explain the extent of consumers' search have begun with a large number of predictor variables and generally accounted for only a small portion of the variation between consumers.

Several economic models of consumers' search behavior have been proposed, yet tests of these models have not been forthcoming. Accordingly, the current study draws upon research into the economics of information as well as the psychology of information processing in order to better explain consumers' search behavior and purchase outcomes.

### Research Approach

Intuition and previous research both suggest that consumers' use of price information will be an important determinant of their search behaviors and purchase outcomes. Therefore, it is surprising to find that there is virtually no published evidence on consumer durables concerning consumers' price knowledge, response to temporary price

promotions or purchase outcomes. Relatedly, data concerning consumers' pre-purchase search have typically been collected by way of post-purchase, retrospective surveys. Since most of those respondents were contacted several months after their purchase process had been completed, it was not feasible to gather information about their price knowledge, their perceptions of market price variation or the cost-benefit tradeoffs which preceded their decision to terminate search.

In order to address a set of issues, pertinent to marketing and central to economic theory, this study employed a two stage survey approach. Consumers who were actively shopping for the target products, but had not yet bought, were first interviewed as they exited the cooperating retail stores. They were then given a second questionnaire to complete and return by mail following the actual purchase. This approach was adopted in order to measure aspects of consumers' knowledge that may be essential to understanding consumers' shopping, yet sufficiently transitory that they have not been amenable to study by way of the conventional methodology. The latter fact may explain why previous field studies have downplayed consumers' acquisition and use of price information.

#### Research Objectives

The following section provides a brief discussion of each of the four main objectives of the study. The first objective was to provide an enhanced description of consumers' pre-purchase search by highlighting their search for price information. While many other aspects of consumers' shopping for durables have been described in

detail (e.g. number of stores visited), no previous study has focused on consumers' acquisition of price information. Accordingly, consumers' efforts to learn about prices by way of catalogs, newspaper ads, mail-order companies, acquaintances, store visits and phone calls were measured.

The second objective of the project was to examine the basic propositions of "Economics of Information Theory" regarding consumers' subjective expected costs and benefits of search in a field setting. One postulate of that theory is that consumers' search efforts will be directly related to their estimates of the distribution of prices. However, research pertaining to the relationship between price variation and search has been confined to the laboratory. In addition, no previous study has measured consumers' subjective opportunity cost of price comparison shopping or its relation to their search behavior.

A third, related objective of the study was to attempt to reconcile the observed data with existing economic theory. Therefore, several additional price-related measures were collected. For example, one previous study found that consumers tended to systematically underestimate the price variation in a local market. If one can trace these misperceptions to consumers' memory limitations and judgmental biases, then both the low mean level of consumers' search and the unexplained variation between consumers may be more explicable.

Finally, this study will explore whether the nature or extent of a consumer's pre-purchase search has a significant impact on his/her purchase outcome. Previous analytical research has concluded that the

expected returns to price comparison shopping are very small. These data provide the first empirical test of that assertion.

• Format for the Dissertation

In the next chapter of the dissertation, the literature that provided the impetus and direction for this project is reviewed. Selected research from the fields of marketing, economics and cognitive psychology is discussed in order to lay the foundation for the hypotheses and issues to be examined herein.

Chapter III of the dissertation presents the model of the search process that is examined in this study. In addition to the standard microeconomic components, this model incorporates a number of other variables that are expected to influence consumers' search efforts and purchase outcomes.

Chapter IV describes the study's methodology. The development of the questionnaire, the sampling plan and the field operations are discussed. In the second part of the chapter, the operationalization of the central constructs and related measurement issues are considered.

In Chapter V the results of the study are presented in the context of the foregoing model. Finally, the implications of the study are discussed and suggestions for future research are offered.

## CHAPTER II LITERATURE REVIEW

In this chapter previous research into consumers' search behavior is reviewed. Studies in both marketing and economics that describe or explain important aspects of consumers' shopping for durable goods are discussed in order to identify the issues and develop the hypotheses examined in this dissertation.

Since the primary goal of the dissertation was to better explain the extent of consumers' search, the chapter begins by presenting an economic theory which was designed for that purpose. Empirical studies of consumers' shopping for durables and the factors affecting the extent of consumers' search are then reviewed.

### Economics of Information Theory and Consumers' Search: Conceptual Background

In a seminal article, Stigler (1961) proposed a model for explaining consumers' search behavior and the dispersion of market prices of homogeneous goods. While subsequent work by economists has expanded this model, its basic contribution remains noteworthy. Stigler recognized that most buyers will not be perfectly informed about the marketplace because individuals place different values on the costs of and returns from search. Relatedly, consumers will search for a lower price only if the expected savings exceed the marginal cost of search. While this may seem obvious in retrospect, one should note the departure

from traditional economic thought. Formerly, consumers were presumed to have perfect information about market prices, thereby driving each seller's price to the marginal cost.

Stigler's work also stimulated research into information acquisition by consumer economists, labor economists and other decision theorists (e.g. Kohn and Shavell, 1974; Schotter and Braunstein, 1981; Weitzman, 1979; Rothschild, 1974; Urbany, 1986). In a review of the (analytic) literature on optimal search for employment, Lippman and McCall (1976) identified a number of assumptions that were implicit in the "Basic Search Paradigm." These included perfect knowledge of the price distribution; infinite horizons; constant search costs; perfect recall; and risk neutrality. Analytic research into search behavior has proceeded by relaxing one or more of the foregoing assumptions and deducing its effect upon optimal search. Therefore, the following discussion briefly explains these assumptions and discusses their relevance to the consumer shopping context.

1. Perfect Knowledge of the Price Distribution: The basic search paradigm (hereafter BSP) assumes that consumers do not know the exact prices at any given store; yet, consumers are certain of the distribution of market prices. Normatively, consumers should then use the price variance, together with the cost of search, to set a reservation price for terminating search. An alternative possibility which economists have examined is that consumers begin the shopping process with a tentative estimate of the price distribution. Consumers would then be expected to update their estimates of the price dispersion as they obtain new information. Note, however, that the few studies

which have examined consumers' arithmetic skills cast considerable doubt upon their ability to perform computations of this nature (e.g. Capon and Kuhn, 1982). Whether consumers develop heuristics which produce results similar to the normative solutions remains an empirical question.

2. Infinite Horizons: This implies that there are an infinite number of stores at which the preferred model is available. This premise enables researchers to base normative solutions to the search problem on large sample results in statistics. The fact that any specific appliance model is available at just two to six stores may well lead consumers to think in terms of particular stores' prices rather than the more abstract price distribution.

3. Constant Search Costs: The BSP assumes that each consumer's marginal cost of search is derived from his/her wage rate and is constant throughout the pre-purchase process. This ignores the possibility that fatigue, or other factors, may render search more costly as the process continues. Moreover, the strength of the relation between consumers' wage rates and their subjective opportunity cost of time has not been firmly established (Goldman and Johannson, 1978; Zimmerman and Geistfeld, 1984).

4. Perfect "Recall" (i.e. access): Once a consumer has elicited an item's price at a store, the consumer is presumed to be able to return to that store and obtain the item at that price. Clearly, the expected gains from search are reduced if the assumption of perfect recall is relaxed. In the context of consumers' shopping for durables, this

assumption hinges upon consumers' ability to remember the item prices that they observe as well as the stability of stores' prices.

5. Risk Neutrality: Consumers' are assumed to maximize the expected net benefits of search. This requires that consumers possess linear utility functions. However, there is evidence which suggests that consumers' utility functions may be nonlinear for a wide variety of decision tasks (Kahneman and Tversky, 1979). If consumers' search behavior reflects either risk aversion or risk seeking behavior, then the normative models of search may not be descriptively accurate. In the context of search for employment, Nachman (1972) has shown that the more risk averse individual will search less. Similar research in the domain of consumers' shopping for durables remains to be conducted.

While the need for empirical research to parallel the analytical extensions of the BSP is apparent, innovative (and expensive) research methods are required. For example, to examine whether consumers' search costs remain constant throughout the search process, a multi-stage survey would be necessary. This may explain why field studies of consumers' search behavior have not advanced beyond the basic search paradigm.

#### Consumers' Pre-purchase Search: Empirical Evidence

The second part of the chapter reviews a number of studies that have described important aspects of consumers' shopping. The factors that have been shown to affect the extent of consumers' pre-purchase search are also discussed. This literature has produced a set of consistent findings from which several generalizations can be reached.

The anomalous findings, which provide the focus for this dissertation, are also discussed.

#### The Extent of Search

The topic of consumers' shopping for durables has naturally received the most attention from scholars in the fields of marketing. Beginning with the landmark study of Katona and Mueller (1955), marketing researchers were surprised to find that most consumers used only a small number of sources of information, visited few stores and often made the purchase only a few days after first considering it. Another finding of this study that has since been replicated across a variety of products, geographic settings and time periods is that consumers vary greatly in terms of the extent of their pre-purchase search (Newman, 1977). For example, a recent national survey of consumers who had bought a major household durable found that the modal number of stores visited was just one whereas 25% of the sample visited four or more stores (Wilkie and Dickson, 1985).

#### Information Source Usage

Given the relatively low mean level of store visitation by consumers one might expect that consumers were merely using other, less time consuming, methods of gathering information. However, the Wilkie and Dickson study, which provides the most comprehensive picture of consumers' information source usage, suggests otherwise. For example, only a small minority of consumers (17%) used the telephone to streamline their shopping. The same result was obtained by LeGrand and Udell (1964). Likewise, only about 20% of the respondents indicated

that they consulted Consumer Reports. More common though was the reading of newspaper ads, checking store catalogs, and/or consulting friends or family. Each of these activities was undertaken by about one-third of the respondents. Finally, Wilkie and Dickson also found that the salesperson was stipulated as the most useful source of information by twice as many consumers as any other source. This seems to corroborate the idea that in-store search remains the principal means by which consumers obtain pre-purchase information.

#### Patterns of Search

Another stream of research in this area has sought to identify patterns of search behavior (Westbrook and Fornell, 1979; Kiel and Layton, 1981; Furse et al., 1984; Claxton et al., 1974). One conclusion from these studies is that a reasonably consistent set of clusters of shoppers can be identified. These groups of shoppers have generally been classified as "non-thorough," "personal advice seekers," "balanced," and "retail store intense."

For example, Westbrook and Fornell (1979) found a sizeable group of non-thorough shoppers. These consumers visit just one store and use few other sources of information. Another group of shoppers has been classified as personal advice seekers. Some of these consumers shop with a "purchase-pal" who assists them with their search and purchase. Alternatively, they may just consult an "expert" acquaintance and rely on his/her advice. A third identifiable group of consumers has been called balanced shoppers. These consumers use a variety of independent and marketer-controlled sources of information and visit an average of

three stores. The retail store intense group is generally comprised of about 20% of the shoppers. These consumers visit four or more stores.

While it is conceivable that the store intense consumers are undertaking this level of search in order to achieve price savings, there is no research evidence pertinent to this point.

#### Factors Affecting the Extent of Consumers' Search

##### Price variation and its effect on consumers' search

While few empirical studies have examined the effects of price perceptions on consumers' search, their results pertain directly to the focus of this research. In a study of consumers' marketplace beliefs, consumers who agreed with the following statement undertook significantly less search: "Competition among appliance manufacturers tends to keep the prices of the various brands about the same" (Duncan and Olshavsky, 1982). Note, however, that the consumers' beliefs were elicited after the purchase was made. Thus, it is possible that consumers who undertook little search rationalized that behavior in their subsequent survey responses.

Two laboratory studies also examined the effect of price variation on search by creating scenarios in which subjects attempted to make optimal cost/benefit tradeoffs. In one study, economics students received instructions about normative behavior shortly before participating. These subjects responded to increased price variation by undertaking further search (Schotter and Braunstein, 1981). In another study however, in the absence of pre-training, the price dispersion

manipulation had no effect on respondents' search behavior (Urbany, 1986).

The only other evidence suggesting an effect of the price distribution on consumers' search is indirect. Researchers have found that as the absolute price of a product rises, the proportion of consumers who visit just one store declines (Claxton et al., 1974; Bucklin, 1966). In view of other evidence indicating that products' price ranges are highly correlated with their absolute prices (Pratt et al., 1979), one might infer that consumers' search is a function of perceived price variation. Alternatively, some third variable (e.g. perceived risk) that covaries with absolute price may be causing the apparent relation between search and price variation.

While the only evidence on this point comes from a laboratory experiment, the findings are provocative. Urbany (1986) manipulated price variation while holding the mean price constant. Recall that the price dispersion manipulation had no effect on search in that study suggesting that absolute price may in fact be driving consumers' behavior.

#### Income and consumers' search

Stigler's second major hypothesis is that search will be inversely related to income since time will be more valuable to a person with a higher wage rate (Stigler, 1961). While this idea has intuitive appeal and is a cornerstone of microeconomic theory, several field studies have failed to find a significant (negative) relationship between income and search (e.g. Riter, 1967; Goldman and Johannson, 1978; Zimmermann and Geistfeld, 1984). Note, however, that two of these studies were forced

to use household income as a proxy for the consumer's wage rate and the associated measurement error may be responsible for the null results obtained.

An alternative reason why income may not have correlated strongly with search in past studies is as follows. In many product categories, consumers with higher incomes purchase greater quantities than consumers with lesser incomes. This provides a greater incentive for the high income consumers to search since the expected savings will be greater over time. As a result, it appeared that income was associated with a greater tendency to search.

Supplements to Economics of Information Theory: Additional Factors affecting Consumers' Search

The "basic search paradigm" (Schotter and Braunstein, 1981) includes two economic factors that should logically affect consumers' search for price information. However, empirical studies in marketing, in both the field and the lab, have identified other variables that may influence consumers' search for price information.

Furthermore, the economics of information approach is designed to explain consumers' search for products of homogeneous quality. As consumers undertake search in the marketplace for information about brands and/or product quality, they will inevitably acquire some price information incidentally. Consequently, the current conceptual framework included several other factors which were expected to affect consumers' search for information about product quality. These variables were incorporated in the proposed model in an attempt to

control for factors that could disrupt the expected economic relationships.

Three categories of supplementary variables are discussed. Consumers' willingness to rely on "price cues" rather than detailed price information will first be discussed. The second category of variables discussed herein is called "price consciousness." A consumer's price consciousness refers to the psychological importance of obtaining a good price and his approach to achieving this objective. The final set of variables pertain to consumers' experience with the product category.

#### Reliance on price cues: Price images and price-quality inferences

Confidence in price images. An implicit assumption of the basic search paradigm is that the consumer has a belief about the price distribution but no detailed knowledge about the prices at specific stores (Schotter and Braunstein, 1981). An equally, if not more, reasonable premise is that consumers base their search decisions upon their beliefs about the relative price levels of competing retailers rather than on the more abstract price distribution (Urbany, 1986). If consumers are confident in their store price images, then there is little need to search for price information irrespective of the price dispersion.

In order to test the latter hypothesis, a recent laboratory experiment varied the information supplied to subjects about the price dispersion in a hypothetical town (Urbany, 1986). It also gave half of the subjects information about the prices at each of the available retailers from the previous year (i.e. price images). While the price

dispersion manipulation had no effect on the amount of search undertaken, the provision of price image information significantly reduced subjects' tendency to search.

Price-quality inferences. Consumers' tendency to use price as an indicator of quality has also received considerable research attention (e.g. Monroe and Petroshius, 1981). Most of this research has been devoted to demonstrating the existence of a perceived price-quality relationship. Conceivably, a consumer who is willing to infer a brand's quality from its price will merely decide on a desired level of quality (or acceptable price) and curtail inter-brand price comparisons. In the context of consumers' shopping for durables, one previous study found that consumers' faith in the price-quality relationship was inversely related to their search (Duncan and Olshavsky, 1982).

#### Price consciousness: Price importance and shopping strategy

Price consciousness has generally been discussed in the context of consumers' shopping for supermarket products. In that literature, price consciousness has been defined to include "price image, price perception, price knowledge, price acceptability, perceived value for the money and price importance as well as other variables that have not yet been articulated" (Zeithaml, 1984, p.612). In the current study the psychological value that consumers' place upon obtaining the best possible price has been called price importance. The shopping strategy which a consumer employs to achieve that goal may also affect the consumer's search for price information.

Price importance. In studies of consumers' shopping for durables, price importance has also been investigated. While such a variable

plays no independent role in economic theory, it has received attention in consumer research and may help predict consumers' search for price information. For example, Rothe and Lamont (1973) found that buyers of private-label appliances indicated that price was the second most important purchase dimension whereas buyers of national brands ranked price fifth on the same six item scale. In another study, stereo buyers at both department and specialty stores ranked price as the most important factor in their store choice (Schiffman et al., 1977).

Of interest in the current study will be the inter-relations among the price importance construct, perceived price variation, the subjective cost of search, and consumers' search efforts. One possibility is that consumers' incorporate both the subjective value of their time and their expectations about the price dispersion when responding to questions about the importance of price in their shopping process. In this case price importance will not explain any incremental variance in consumers' search behavior. Alternatively, consumers may not conceptualize the shopping situation in terms of a distribution of prices or the opportunity cost of their time. Instead, the price importance construct may tap the consumer's tendency to be a thrifty shopper irrespective of any explicit or implicit cost-benefit analysis.

Shopping strategies: negotiate the purchase price; buy on sale.

The strategy that a consumer adopts to obtain a good price may also influence the extent of search. For example, a consumer might call or visit several stores in order to make price comparisons. Alternatively, a consumer may attempt to obtain a good price by negotiating the price

with a salesperson or manager rather than by checking competitors' prices.

In this vein, several previous papers report on the various stages that occur during the selling transaction but few studies have examined the negotiation between the customer and salesperson (e.g. Olshavsky, 1973). In a noteworthy exception, Pennington (1968) identified four aspects of the bargaining process and showed their impact upon consumers' decisions to make the purchase at that time. However, no research to date has examined whether price negotiation tends to serve as a substitute for, or complement to, consumers' search for price information.

An alternative shopping strategy which a consumer might adopt is simply to buy an appliance that is "on sale." While this strategy will not ensure that the consumer obtains the best possible price, it should result in a satisfactory price with a minimum of search effort. Previous research indicates that the vast majority of appliance purchases are made at a sale price (Wilkie and Dickson, 1985). Whether consumers utilize this shopping strategy to reduce their search for price information remains to be established.

#### Consumers' Product Experience:

#### Purchase Experience, Loyalty, Expertise, and Intrinsic Interest

A number of previous studies have examined the relationship between consumers' purchase experience and their search (Katona and Mueller, 1955; Newman and Staelin, 1971). These studies usually report a negative relationship. However, the two variables often appear

unrelated and until recently no theoretical integration of these data had been achieved.

The most straightforward prediction is that experienced consumers will undertake less search. In fact, several studies have found that consumers are more likely to base the purchase decision on their prior knowledge than on the new information they acquire while shopping (Wilkie and Dickson, 1985; Rothe and Lamont, 1973). Moreover, experienced consumers may feel confident in their ability to make a wise purchase decision soon after initiating their search (Cattin and Punj, 1983).

However, other studies have found no relationship between purchase experience and search (e.g. Bennett and Mandell, 1969). One explanation for this null result is that experience will mitigate the need for search only if that experience has been satisfactory. Newman and Staelin (1971) found such an interaction. Perhaps experienced consumers restrict the set of brands and stores to those of which they have favorable impressions. In this event, brand and/or store loyalty will be the variable mediating the relationship between experience and search.

A more complex explanation for the inconsistency of previous findings was advanced in a more recent paper (Brucks, 1985). This paper highlights the role of product knowledge as a determinant of search behavior. In general, consumers will acquire product knowledge with purchase and usage experience. Brucks main contribution was in recognizing the dual implications of such expertise.

Clearly, the extremely knowledgeable consumer may need to seek out very little additional information. On the other hand, a consumer who is devoid of product knowledge may feel ill-equipped to process the information that might be gathered during search. Thus, some prior knowledge is necessary to enable the consumer to formulate questions which can then be resolved by way of pre-purchase search. This logic suggests an "inverted U" relationship between knowledge and search for information about product quality. Note, however, that a consumer's prior knowledge about retail prices is likely to obsolesce quickly. Thus, prior knowledge remains a requisite for making price/quality comparisons; but, it may not have the inhibiting effect on price search that has been found when consumers' total search has been examined.

Complicating the search-experience relation further are individual differences in "product involvement." Some consumers may be intrinsically interested in a product category. In these cases one would expect many on-going search activities (Bloch et al., 1986). In that study, which highlighted consumers' browsing activity, on-going search was defined as search occurring outside of the formal pre-purchase process. Interestingly, it found that such search was undertaken more for its hedonic value than to acquire information. This supports the idea that consumers' browsing activity may be a complement to, rather than substitute for, pre-purchase search.

Summary and Issues

A continuing stream of research into consumers' shopping for durables has produced a set of interesting empirical generalizations. Among them are the following:

Considerable heterogeneity exists among consumers regarding the extent of their information search and shopping.

Differential search costs among consumers, as proxied by their incomes, are only weakly related to their search efforts.

The majority of consumers purchase their durable goods after visiting just one or two stores.

These findings suggest the need for an explanation of

1. the low level of search undertaken by the majority of consumers.
2. the variation in consumers' search efforts.

Understanding the Low Mean Level of Search

One shortcoming of this literature is that there appears to be an unexplained discrepancy between the non-thorough nature of the pre-purchase search undertaken by most consumers and the prediction implied by economic theory. For example, Ratchford (1980) developed a model for estimating the value of information search for a variety of appliances. To do so the author collected price and attribute data for five appliances from Consumer Reports. With the assumption of a linear utility function the author then derived the market hedonic price function. The result is that each brand is characterized in terms of its price adjusted for quality. The error (in dollars) associated with the purchase of any brand other than the optimal can be quantified. From the resulting distribution of errors, one can then compute the expected value of each successive search.

This study found that a "price-conscious" consumer could expect to save approximately thirty dollars from his third search and seventeen dollars from his fourth search. Recognize, in addition, that some search is required to locate an acceptable brand and model. In this light the fact that most durables are purchased after just one or two store visits seems noteworthy. Two methodological and two substantive explanations for this anomaly are presented below.

Methodological explanations for the low reported level of search

One potential explanation for the aforementioned discrepancy is that consumers, in fact, undertake more search than our measures have been able to capture. A pair of related possibilities are discussed below.

First, as noted previously, most studies of consumers' search require that consumers recall their pre-purchase activities several months after the purchase. Under those circumstances it seems likely that consumers will fail to recall some of their pre-purchase activities. In one study of this phenomenon, consumers retrospectively reported significantly less search activity than was recorded by observational measures of these same consumers' search (Newman and Lockeman, 1975). Note, however, that other studies that have assessed consumers' (self-reported) search efforts as a function of the passage of time until data collection found no systematic effect of recall on reported search (Wilkie and Dickson, 1985).

Browsing may be another factor that limits consumers' reported search activity. If consumers acquire purchase relevant information incidentally--i.e. prior to the time that they form a definite intention

to buy--then the need to seek out information later is probably reduced (Claxton et al., 1974). Moreover, previous studies of consumers' shopping for durables have generally excluded browsing from consideration.

Substantive explanations for the low reported level of search and the variation in consumers' search efforts

Another possible account of the low mean level of consumer search is that consumers' subjective cost of search significantly exceeds the opportunity cost of time implied by their wage rates. Along these lines, research in both transportation and labor economics has found that the effort required by an activity affects the compensation required (Becker, 1985). It is conceivable that some consumers find travelling to stores, comparing brands, or talking with salespeople especially effortful thereby increasing the subjective cost of such activity. This same reasoning suggests that consumers' subjective cost of search, rather than their wages, may help account for much of the variation in consumers' search efforts.

Irrespective of the value that consumers place on their time, if consumers underestimate the price variation in the marketplace, then they will probably undertake less search than normatively expected. In this vein, several recent studies document that local markets often contain substantial price variation (Duncan, 1981; Pratt et al., 1979). Moreover, one recent paper reported that consumers (who were not in the market for the target products) systematically underestimated the actual price dispersion in a local market (Maynes and Assum, 1982).

Those authors also presented an explanation for this phenomenon that complements Stigler's thesis. They speculated that consumers (who underestimate the price dispersion) would seek out less price information than normatively expected fostering even greater price dispersion. If one can identify individual differences that account for this tendency, then this may help explain both the variation in, and low mean level of, consumers' search.

In the next chapter a model of consumers' search behavior and purchase outcomes is proposed. This model incorporates consumers' subjective cost of search. It also draws heavily upon behavioral decision theory to explain why (some) consumers may underestimate the price range for their preferred models.

## CHAPTER III THE PROPOSED MODEL

### Introduction

At the outset of this dissertation we noted that the topic of consumers' information search has received considerable research attention in marketing. Several empirical generalizations have been reached but attempts to explain the extent of consumers' search have generally accounted for only a small portion of the variation between consumers. In fact, many of these studies have been descriptively oriented.

Economists and other decision theorists interested in information acquisition have taken an entirely different approach to this topic. These researchers have derived prescriptive models of optimal search but few empirical tests of these models have been forthcoming.

Accordingly, this chapter presents an integrative conceptual framework for explaining consumers' search behavior and purchase outcomes. The proposed model is based upon economics of information theory but also draws upon research in marketing and psychology in order to

1. enhance our understanding of the factors that influence consumers' search for price information and their purchase outcomes.
2. assist in reconciling the observed data with existing economic theory.

3. control for factors that could disrupt the proposed economic relationships.

After a brief discussion of the complete model, it is decomposed into segments for purposes of exposition. A pictorial representation of the complete model appears in Figure 3-1.

#### Overview

Like the economics of information theory, the current model proposes that the cost of search and price dispersion will be the major determinants of consumers' search for price information. However, the proposed model relaxes two operating assumptions which have been incorporated into most previous studies in this domain. First, consumers' subjective estimates of price variation are not expected to mirror the true dispersion. Second, consumers' subjective costs of search may not parallel their wage rates or incomes (Becker, 1985). Therefore, the first two segments of the model examine the antecedents of consumers' perceived price variation and subjective cost of search respectively.

The relationships posited by economics of information theory are then discussed in the portion of the model devoted to explaining consumers' search for price information. In this context a number of factors that are peripheral to economic theory, but expected to influence consumers' search, are also identified. Finally, the impact of consumers' search is considered. That is, do consumers' purchase outcomes vary significantly as a function of the nature or extent of their pre-purchase search?

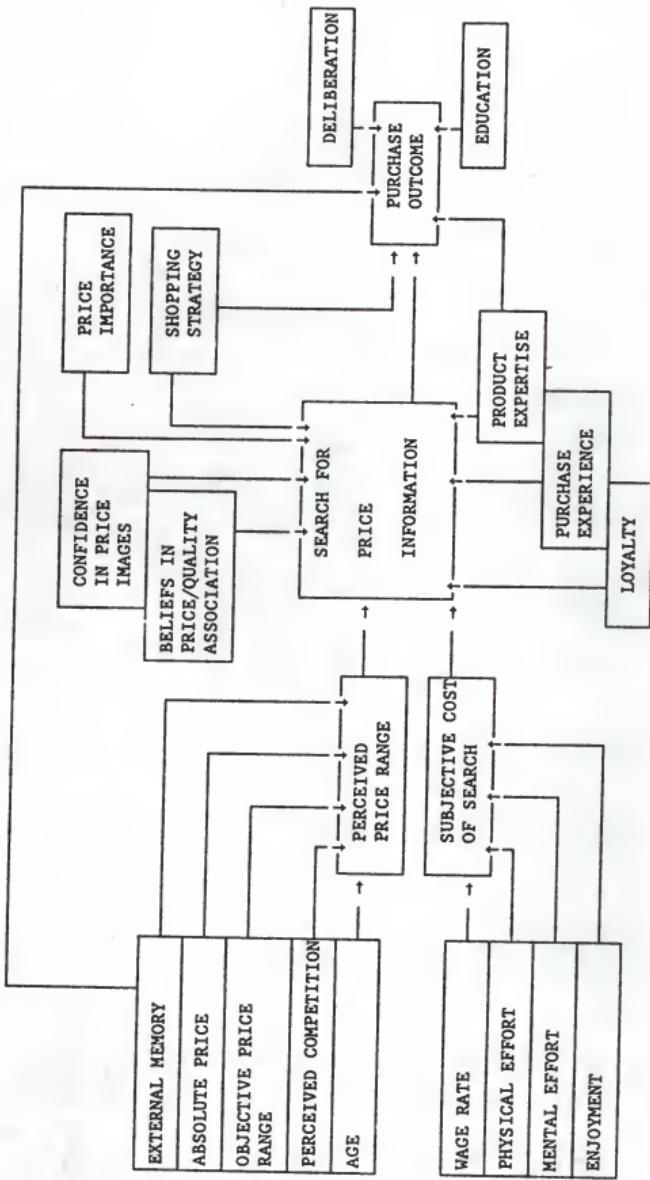


Figure 3-1  
The Proposed Model

### Perceived Price Variation and Subjective Cost of Search

The current model proposes that consumers' perceived price variation and subjective cost of search will be linked to economic realities. Therefore, each segment of the model includes the appropriate economic variable. In addition, the proposed model recognizes that consumers appear to undertake less search than economic theory would predict. Therefore, the model also incorporates several variables that are designed to reconcile previous research with existing economic theory.

### Consumers' Estimates of the Price Dispersion

An "economic man" allegedly knows the price distribution of his preferred model. In the absence of such knowledge, the consumer must use related information as the basis for an estimate of the market price dispersion. The portion of the model pertaining specifically to consumers' estimates of the price dispersion appears in Figure 3-2.

Objective price range. One way that consumers may estimate the price dispersion is by checking the price of the preferred model at multiple stores. Therefore, consumers' estimates of the price range of the preferred model should be influenced by the objective price range.

This suggests

- H 1. The objective price range of the consumer's preferred model will have a positive effect on the perceived price range of that model.

Absolute price. Previous research has found that the absolute price of an item is directly related to the price range of that item in the marketplace (Pratt et al., 1979). This may have reflected a greater

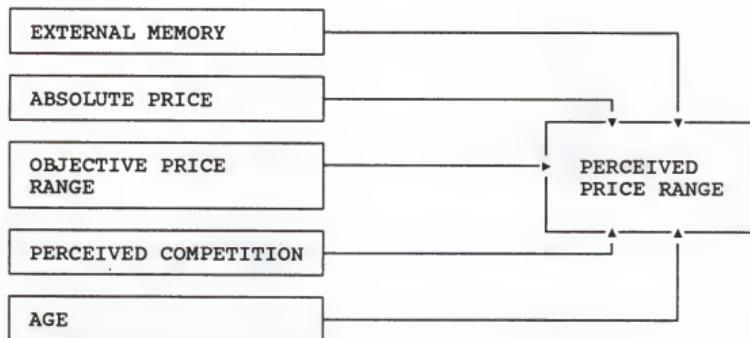


Figure 3-2  
Explaining Consumers' Price Perceptions

degree of unmeasured variation in the features of the higher priced items. Alternatively, variations in retailers' pricing strategies may have resulted in greater inter-store price discrepancies on items where the absolute price was high. Presumably, consumers are also aware of this relationship.

This suggests

H 2. The absolute price of the consumer's preferred model will have a positive effect on the perceived price range of that model.

#### Additional Predictors of the Consumers' Perceived Price Range

The remaining predictors of consumers' estimates of the price dispersion are derived from behavioral decision theory (Einhorn and Hogarth 1981). If consumers' cognitive heuristics can account for both

1. differences in consumers' price perceptions and
  2. downwardly biased estimates of the price dispersion,
- then consumers' price perceptions may help account for both the variation in consumers' search and the low mean level of search alluded to previously.

Use of external memory (i.e. written records of the prices found in each store). Previous research on human memory and judgment indicates that people are generally over-confident in their abilities (Lichtenstein et al., 1982). This suggests that few consumers will feel the need to record the price information that they acquire while shopping. Failure to make use of "external memory" forces the consumer to make an intuitive prediction of the price dispersion rather than estimate it from the prices observed. A number of studies into the calibration of knowledge suggest that consumers' cognitive heuristics

and conceit may help explain their estimates of the price dispersion (Fischhoff et al., 1977).

The seminal work of Alpert and Raiffa (1969) is illustrative. Subjects were asked to estimate a variety of the behaviors and opinions of their fellow classmates. The method of eliciting their certainty judgments involved asking the subjects to indicate the following five fractiles: (.01; .25; .50; .75; .99). A subject's 99th fractile is the estimate such that he is 99% certain that the true value falls below that number. These authors defined a "Surprise Index" as the percentage of true values falling outside the subjects' implicit 98% confidence intervals. One striking result of this study was that the Surprise Index was equal to 43. This finding suggests that people may seriously underestimate the extreme values of familiar, but unknown, quantities. The analogy to consumers' predictions of the range of market prices is apparent.

Pitz' (1974) research on intuitive numeric predictions in other domains revealed a similar "hyper-precision effect." At least one researcher attributed this apparent over-confidence to the human desire to maintain an illusion of control--a belief that the world is predictable and well understood (Langer, 1975).

This suggests

H 3. Use of external memory will have a positive effect on the consumer's perceived price range of the preferred model.

Perception of the number of competitors. Logically, the greater the number of stores at which a particular model is available, the

greater the potential for price variation at any given time.<sup>1</sup> However, it is doubtful that the full set of stores is both memorably available and accessible (Tulving and Pearlstone, 1966). Thus, the consumer is likely to unwittingly omit specific competitors from consideration as a joint result of the memory-based nature of the decision process and the consumer's overconfidence in his memory. If consumers' estimates of the price dispersion depend upon the number of competitors evoked, then these estimates are likely to be biased downward. Moreover, previous research has shown that missing information is underweighted in many types of judgment tasks (Fischhoff et al., 1978; Estes, 1976). Thus, consumers' perceptions of the level of competition are expected to affect their estimates of the price range of the preferred model. In addition, lack of awareness of the extent of competition could help explain a downward bias in consumers' estimates of the price dispersion.

H 4. A consumer's estimate of the number of stores which sell the preferred model will have a positive effect on the perceived price range of that model.

Age. Research has shown that certain information processing capabilities tend to decline with age (Phillips and Sternthal, 1977). To the extent that elderly consumers are less able to recall exact price information, they are more likely to make and rely upon an intuitive prediction of the price dispersion. For the same reasons as given above, this is likely to result in an underestimation of the price range of their preferred model.

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<sup>1</sup> However, a consumer could infer that there will be more price competition when the number of retailers that offer a specific appliance model is high. In this case, one might predict a curvilinear relationship between perceived competition and perceived price range.

Note, in addition, that age may be negatively related to the estimated price dispersion for an entirely different reason. During the era when resale price maintenance was legal policy, consumers frequently found identical prices across stores. If elderly consumers have "learned" that item price variation across stores is usually small, then this constitutes an alternative explanation for an inverse relation between age and perceived price variation.

- H 5. Age will be inversely related to the consumer's perceived price range of the preferred model.

#### Consumers' Subjective Cost of Search

Economic theory asserts that

1. information search will be inversely related to the cost of search.
2. the opportunity cost of search will be based primarily on the consumer's wage rate.
3. to the extent that the level of effort associated with search differs from the effort involved with one's occupation, the cost of search will depart from the wage rate.

Thus, it is somewhat surprising to find that previous studies in the marketing literature find little or no relation between income and search. However, these studies have failed to incorporate Becker's (1965) contribution that the value of time will vary positively with the effort expended per hour. The current study extends this idea by recognizing that the consumer's subjective cost of time may be influenced by the enjoyment associated with an activity as well as the required effort level. If the typical consumer's subjective cost of

time is higher than his/her wage rate, then this would help explain the low mean level of pre-purchase search observed in previous research.

- H 6. Consumers' wage rates will have a positive effect on their subjective cost of search.

To probe why a consumer's subjective cost of search may differ from his wage rate, three variables that were expected to affect that cost were measured--the mental effort, physical effort and enjoyment associated with shopping. The portion of the model pertaining specifically to consumers' subjective cost of search appears in Figure 3-3.

Effort. Research in labor economics has shown that the greater the effort required by a task, the greater the compensation required. In the context of consumers' shopping, this suggests

- H 7. The mental effortfulness of shopping will have a positive effect on consumers' subjective cost of search.
- H 8. The physical effortfulness of shopping will have a positive effect on consumers' subjective cost of search.

Enjoyment. Relatedly, consumers who enjoy shopping are expected to place relatively less opportunity cost on such time.

- H 9. Enjoyment of shopping will have a negative effect on consumers' subjective cost of search.

#### Explaining the Extent of Consumers' Search

##### The Economics of Information and Consumers' Search

According to the economics of information approach, a consumer will search for lower prices as long as the marginal cost of additional search is less than the expected marginal revenue (Stigler, 1961). (See Figure 3-4 for the portion of the model that pertains to the economics of information theory and consumers' search.)

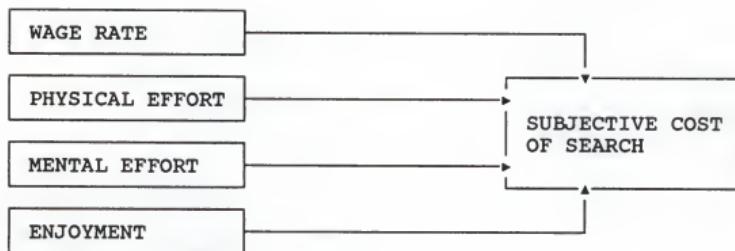


Figure 3-3  
Explaining Consumers' Subjective Cost of Search

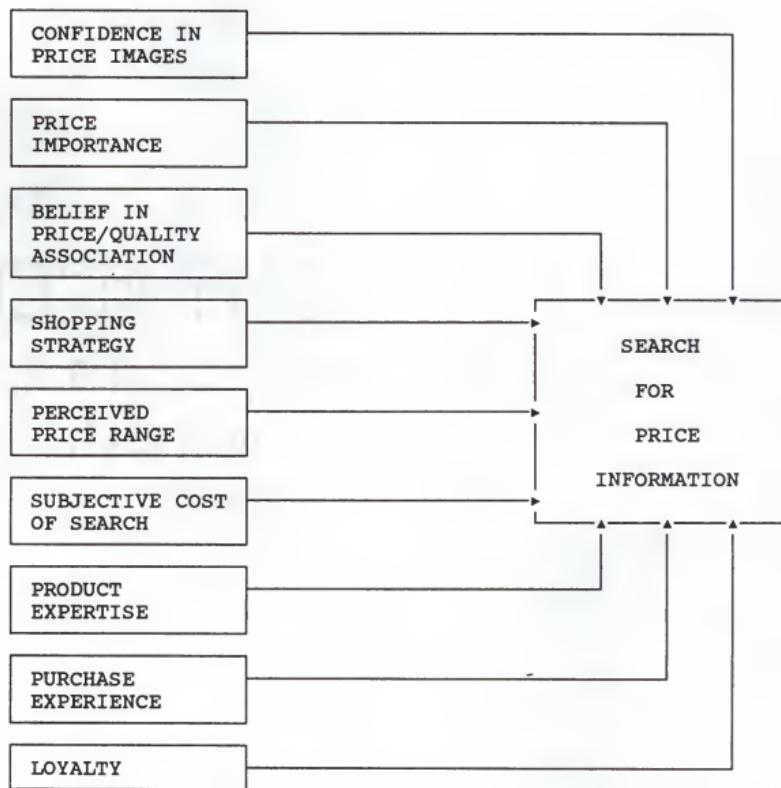


Figure 3-4  
Explaining Consumers' Search for Price Information

Perceived price variation. Once a consumer has located a satisfactory brand and model, he must decide whether to buy or continue shopping. The expected marginal revenue of continuing to shop is a function of the perceived price variation.

H 10. Consumers' estimates of the price variation of their preferred model will have a positive effect on their search for price information.

Subjective Cost of Search. Noted above was that consumers' search efforts have generally been weakly related to their wage rates. Also noted was that consumers' subjective cost of search could be determined, in part, by factors other than their wage rates. Consequently, this study examines the explanatory power of consumers' subjective cost of search in predicting consumers' search efforts.

H 11. Consumers' subjective cost of search will have a negative effect on their search for price information.

#### Supplements to Economics of Information Theory

As noted in the literature review, three categories of supplementary variables are included in the proposed model of consumers' search. They are: consumers' tendency to overlook market price variation by relying on "price cues"; consumers' "price consciousness"--referring to the psychological importance of obtaining a good deal and the strategy for doing so; and consumers' experience with the product category.

#### Reliance on price cues.

Once a consumer has found a satisfactory model, he or she must then decide if the expected returns from further search are likely to exceed the out-of-pocket and opportunity costs. At this point, the consumer

may estimate the price dispersion for his preferred model(s) in order to assess the expected savings from comparing prices. Two alternative decision processes that may negate the perceived price variation, partially or entirely, are examined below.

Confidence in price images of retail stores. Previous research indicates that most consumers feel reasonably certain of their product knowledge before engaging in any external search (Wilkie and Dickson, 1985). In fact, consumers have reported that their prior knowledge was the most important factor in their purchase decision (Rothe and Lamont, 1973).

It also seems conceivable that many consumers will feel reasonably confident about which stores have the best prices even before they begin to shop. For these consumers, the expected benefit of comparing prices is substantially reduced.

H 12. Confidence in price images of retail stores will have a negative effect on consumers' search for price information.

Price-Quality inferences. Belief in a strong relationship between price and quality in a product category may also limit a consumer's search. For example, once a consumer has located a satisfactory model, he could expect to find either

1. the same model for a better price (e.g. on sale).
2. another model of similar quality for a better price.

However, a consumer who believes that price is a good indicator of quality will only consider the former possibility. Strong belief in the price-quality relationship implicitly denies that a brand of similar quality, for a much better price, exists in the marketplace. That is, all brands are expected to lie on "the efficient market frontier" so

that lower priced models will necessarily be of inferior quality (Maynes and Assum, 1982).

H 13. Strong belief in a price-quality relationship will have a negative effect on consumers' search for price information.

Price consciousness.

According to economic theory consumers' search for price information should depend on their subjective expected costs and benefits of search. However, obtaining a good deal may have psychological, as well as monetary, value to some consumers. Moreover, the Basic Search Paradigm assumes that the only way that a consumer can try to find a better price on the preferred model is to compare that item's price at multiple stores. Exceptions to each of these assumptions suggest additional factors that may influence consumers' search.

Price importance. Obtaining a good deal on the chosen model (i.e. a better price than most consumers) may be especially rewarding psychologically to some consumers. These consumers are expected to undertake more search. Note that the Price Importance construct may merely represent some combination of consumers' perceived price variation and subjective cost of search. In this case, Price Importance will not explain any incremental variance in consumers' search efforts.

H 14. Price Importance will have a positive effect on consumers' search for price information.

Shopping strategy. One way that a consumer can try to obtain a better price on his preferred model is to compare the item's price at other outlets. Alternatively, the consumer can try to negotiate the price with the salesperson or manager at the first store at which a

satisfactory model is located. In this case, price negotiation may serve as a substitute for further search. This would help explain the low mean level of search observed in previous studies.

H 15a. Price Negotiation will have a negative effect on consumers' search for price information.

If a consumer believes that most of the market price variation for any specific appliance model can be attributed to the difference between the regular price and the "sale" price, then an alternative shopping strategy may be warranted. By locating and purchasing a satisfactory model that is "on-sale", the consumer can expect to obtain a good purchase outcome with a minimum of search effort. This shopping strategy would also reduce a consumer's search.

H 15b. Buying On-Sale will have a negative effect on consumers' search for price information.

Consumers' product experience:

Purchase experience, loyalty and product expertise

In view of both ongoing technological changes and frequent price changes in home electronic products, one might not expect product experience to exert much influence on consumers' search behavior. However, empirical evidence to the contrary suggested the following hypotheses.

Purchase experience. Consumers who have previously made a purchase in the same product category are familiar with more of the available stores and brands. Thus, less "exploratory search" is expected.

H 16. Purchase experience in the product category will have a negative effect on consumers' search for price information.

Loyalty. In general, both brand and store loyalty are low in consumer durable product categories. However, consumers who are "loyal"

to a particular brand or store are expected to restrict their search.

H 17a. Store loyalty will have a negative effect on consumers' search for price information.

H 17b. Brand loyalty will have a negative effect on consumers' search for price information.

Expertise. Consumers who feel that they lack the knowledge necessary to evaluate brands and/or assess the merits of various features may not expect to benefit from shopping. Moreover, the perceived cost of acquiring and/or processing information may be higher for these consumers.

H 18. Expertise in the product category will have a positive effect on consumers' search for price information.

#### Explaining Consumers' Purchase Outcomes

In this study the purchase outcome refers to the price which a consumer pays for a specific appliance (i.e. holding brand and model constant). The relationship between consumers' search behavior and their purchase outcomes was of primary interest. Therefore, this hypothesis is described first. Then, several additional predictions are explained. The portion of the model pertaining specifically to consumers' purchase outcomes appears in Figure 3-5.

Search for price information. Analytic studies of information search deduce the expected gains from successive levels of search as a function of the distribution of prices. However, as noted previously, these studies have a number of limiting assumptions (e.g. infinite horizons, perfect recall, etc.) which may result in an underestimation of the expected gains from search. On the other hand, if either consumers' price images are accurate or one of the aforementioned

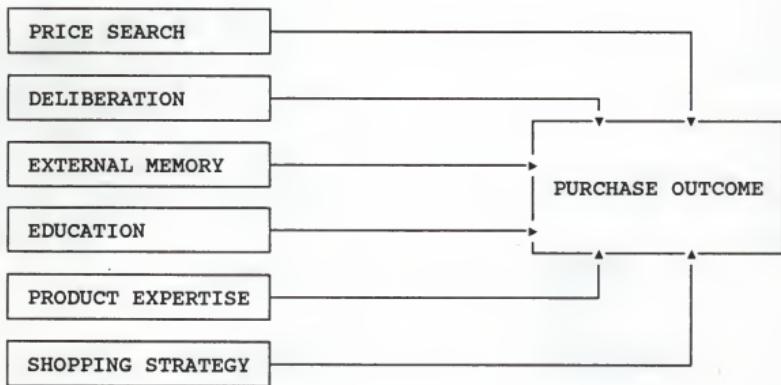


Figure 3-5  
Explaining Consumers' Purchase Outcomes

shopping strategies serves as an effective substitute for search, then the effect of consumers' search on their purchase outcomes may not be as strong as suggested by theory.

Nonetheless, consumers who compare the price of the preferred brand/model before making the purchase are expected to achieve better purchase outcomes. The magnitude of the savings will also be of interest.

- H 19. Consumers' search for price information will have a negative effect on their purchase outcomes.

#### Other Factors Affecting Consumers' Purchase Outcomes

External memory. Several factors other than the amount of search for price information may affect consumers' purchase outcomes. One such factor is the use of external memory--i.e. written records of price information. With even a little bit of humility, each of us should be able to recognize the difficulty in remembering the vast array of models and prices in the marketplace. Yet, it appears that most consumers attempt to remember the prices that they observe while shopping. As a result, consumers who keep written records of prices should be able to make more, accurate price comparisons and obtain their preferred models at better prices.

- H 20. The use of external memory will have a negative effect on consumers' purchase outcomes.

Education. Consumers who have more education (cognitive training) should be more adept at remembering the price information that they find while shopping. In addition, previous research in economics indicates that education increases allocative skills such as the ability to adapt

to dynamic situations (Schultz, 1975). Both of these benefits of education should accrue to consumers who are shopping for durable goods.

H 21. Education will have a negative effect on consumers' purchase outcomes.

Deliberation. Another interesting question concerns the effect of the deliberation period on consumers' purchase outcomes. Deliberation is defined as the time between first considering the purchase and the date of actual purchase.

By avoiding a hasty purchase, the consumer is able to observe longitudinal as well as cross-sectional price variation. Especially in those cases in which one's preferred model is available at just one or two stores, the item's price variation between stores may be minimal while its price may vary substantially over time. In these cases the deliberate consumer is expected to achieve a better purchase outcome.

H 22. Deliberation will have a negative effect on consumers' purchase outcomes.

Expertise. One might also expect that consumers with greater product expertise would achieve better purchase outcomes. Presumably, these consumers are better able to assess the worth of various features and determine whether a particular offering is truly a good value for the money.

H 23. Expertise in the product category will have a negative effect on consumers' purchase outcomes.

Price negotiation. Unlike the situation in automobile dealerships, most home appliance retailers discourage price negotiation. Since the percentage of appliance shoppers who do negotiate the purchase price is small, retailers may be willing to make price concessions. Thus, a

consumer who negotiates may be able to obtain the desired model at a price which is lower than the posted price.

H 24a. Price Negotiation will have a negative effect on consumers' purchase outcomes.

Buying on-sale. Consumers who are patient and/or persistent enough to locate the desired model "on-sale" should be able to obtain the appliance at a price which is lower than the regular posted price.

H 24b. Buying On-Sale will have a negative effect on consumers' purchase outcomes.

The research methodology which was used to test the foregoing hypotheses is described in the next chapter.

## CHAPTER IV METHODOLOGY

This chapter describes the methodology and measures which were used to test the hypotheses advanced in Chapter III. In the first section of the chapter the data collection procedures are described.

Considerations underlying the selection of product categories, development of the questionnaires and the sampling plan are also discussed. In the second section of the chapter, the operationalizations of the central constructs and related measurement issues are described.

### Procedures and Rationale

#### Data Collection

The data were collected using three distinct methods. (See Table 4-1.) The first method was to intercept appliance shoppers as they exited one of the cooperating stores without making a purchase. These consumers were interviewed at the store (i.e. pre-purchase survey) and given a questionnaire to complete at home when (and if) the purchase was made. Respondents were told that they would receive five dollars as soon as the post-purchase questionnaire was returned. One hundred forty four respondents completed both the store-exit survey and the post-purchase questionnaire.

Table 4-1  
Data Collection Methods

<u>Prepurchase and Postpurchase Contact</u>	<u>Postpurchase Contact Only</u>	
<u>Method 1</u>	<u>Method 2</u>	<u>Method 3</u>
Consumer is asked by the study's interviewer to respond to the Pre-Purchase Survey as well as to complete the Post-Purchase Questionnaire. (144 respondents were obtained by Method 1)	Consumer is asked by the study's interviewer to complete the Post-Purchase Questionnaire only. (160 respondents were obtained by Method 2)	Consumer is asked by the salesperson to complete the Post-Purchase Questionnaire only. (128 respondents were obtained by Method 3)

In the second method of data collection, the consumer made the purchase in the presence of the study's interviewer. In these cases, pre-purchase data were not collected.<sup>1</sup> These consumers were given the post-purchase questionnaire to complete at home and told that they would receive five dollars as soon as the post-purchase questionnaire was returned. One hundred sixty of these respondents completed the post-purchase questionnaire.

The third method of data collection did not involve the study's interviewers. Two of the retailers, who declined to permit the study's interviewers onto their premises, agreed to distribute the post-purchase questionnaire to consumers who bought one of the target products at their stores. As was the case with the second method, no pre-purchase survey was conducted with these consumers. Likewise, these respondents were told that they would receive five dollars as soon as the post-purchase questionnaire was returned. One hundred twenty eight of these respondents completed the post-purchase questionnaire. Based on these criteria, color televisions and video cassette recorders (VCRs) were identified as acceptable product categories. Subsequent inspection of the home electronics retailers in Gainesville revealed that microwave ovens were nearly always sold at these same outlets. While microwaves were generally lower priced items and therefore less appropriate in terms of stimulating consumers' search for price information, their

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<sup>1</sup> The original research plan entailed interviewing buyers as well as non-buyers. However, field testing of this procedure found that store personnel were often involved in transporting the appliance to the consumer's awaiting vehicle and it was simply not possible to detain store employees for the purpose of conducting the pre-purchase survey. Due to this constraint the buyers received only the post-purchase questionnaire to complete at home.

inclusion in the study entailed no incremental cost and extended the range of issues that could be explored. Moreover, expanding the set of products did not result in missing TV and VCR shoppers because the interviewers were idle for an average of forty minutes per hour. Thus, the inclusion of microwaves would also serve to increase the total sample size on which certain analyses would depend.

#### Pretesting And Questionnaire Design

##### Store-exit interview

The author conducted the initial exit-interviews at each store. Fifty such interviews were completed before additional interviewers were employed. This served several purposes. First, it provided a preliminary estimate of the percentage of consumers who would participate in the study. During both the pretest and the study proper, approximately 70% of consumers who were shopping for the target products consented to the interview.

Second, it provided an opportunity to ensure each of the cooperating retailers that their store operations would not be adversely affected by the interviewer's presence. Third, it alerted the author to idiosyncrasies associated with interviewing at each store. These anomalies were communicated to the interviewers who were subsequently hired. Finally, it enabled the author to gauge consumers' willingness and ability to respond to the proposed questions. The store-exit interview generally took between five and ten minutes to complete.

#### Post-purchase questionnaire

Unlike the store-exit interview, the post-purchase survey was demanding. Eight pages in length, it was designed to take about twenty minutes to complete. The author spoke with ten of the pretest respondents by phone in order to clarify their responses and elicit their reactions to the questionnaire. These consumers indicated that the post-purchase survey took anywhere from fifteen to forty-five minutes to complete.

The phone follow-ups also suggested that certain questions were ambiguous. In order to pinpoint the source(s) of ambiguity, several consumers were asked to complete the post-purchase questionnaire just after leaving the place of purchase. They were then interviewed in depth. As a result, several items were modified and two others were eliminated when it became apparent that consumers were not conceptualizing the search process in the terms implied by those questions.

#### Recruitment and Training of Interviewers

The author recruited the prospective interviewers and trained them individually. Prospects were hired if they were neat in appearance and could speak English clearly. Each new interviewer observed one interview and reviewed the questionnaire with the author before working alone. The performance of each interviewer was monitored periodically to ensure that they were performing adequately. In addition, the author spoke with each interviewer weekly to resolve any problems that arose.

### Sampling Design

The population of interest was defined as consumers who bought a TV, VCR or microwave oven in Gainesville between April and August of 1987.

The twenty local retailers of the target products were offered a summary of the study's findings in return for their cooperation with the study.<sup>2</sup> Fifteen (75%) elected to permit the interviewers onto their premises. Two of the other five retailers, including the largest electronics store in Gainesville, contributed post-purchase (only) observations to the study. These stores refused to allow our interviewers onto their premises. However, they did permit their own salespeople to distribute the post-purchase questionnaires to consumers who made the purchase at their stores. Thus, the sampling frame consisted of consumers who visited these stores between April and August and subsequently purchased one of the target products from any store.

### Sampling plan

The survey sampling plan was designed with several considerations in mind. First, having achieved a near census of stores, one objective was to allocate the same number and "type" of hours to each store. Comparisons of stores' traffic and sales could then be provided to the participating retailers.

Second, to obtain as many observations as possible given the time and budget constraints of the study, weekends and weekday evenings hours

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<sup>2</sup> If a store's primary business was rent-to-own, then it was excluded from the study.

were proportionately oversampled because those were the peak shopping times. Third, the sampling plan was designed to check for potential bias. Along these lines, one might expect that the search behavior of midweek daytime shoppers would be distinct since they have a greater amount and flexibility of time available.<sup>3</sup> Therefore, at the cost of reducing the total number of observations, twelve (out of fifty-six) interviewer hours per week were allocated to these off-peak periods.

Finally, the plan was designed so that no store was represented more than once in any given week. This helped to ensure that the sample would not include a disproportionately large number of consumers from any single store as a result of a "one week sale."

#### Unit of analysis

In many cases a husband and wife shopped jointly. Thus, the unit of analysis was the household. Generally, one member of each couple volunteered to respond. If the couple asked about who should respond, the interviewer requested that the primary decision maker take the lead in responding. In some cases the couple insisted that shopping was truly a joint effort in which case their consensual responses were recorded by the interviewer.

The post-purchase survey asked the respondent to indicate the extent of their spouse's involvement in the search and purchase process. It then requested that the "respondent" give the questionnaire to the

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<sup>3</sup> A comparison of the mid-week daytime shoppers to the remainder of the sample revealed no significant difference in their search for price information ( $t < 1$ ).

other party if the spouse had in fact done all of the shopping and made the purchase decision.

#### Sample Composition

The following discussion provides a more detailed description of the study's respondents. It begins by reviewing the composition of the entire sample of respondents. It then divides the total sample into the sub-samples which were actually used to test each of the study's hypotheses.

#### The total sample

The total sample consists of the 432 respondents from whom post-purchase surveys were received. As indicated previously, 144 post-purchase surveys were received from consumers who were also interviewed during their pre-purchase search. Of the remaining 288 post-purchase surveys, 160 were received from consumers who were intercepted by the study's interviewers immediately after the purchase was made. The remaining 128 post-purchase surveys were received from consumers who bought an appliance at one of the two stores where the salespeople distributed the survey to their customers immediately after the purchase was made. Table 4-2 displays the demographics and search behavior of the respondents obtained by each of the three data collection methods. Since the latter two groups (i.e. post-purchase only respondents) did not differ significantly in terms of either their demographics or search behavior, these groups are pooled in the analysis and discussion which follow.

Table 4-2  
Mean Sample Characteristics  
As a Function of the Method of Data Collection

	<u>Method 1</u>	<u>Method 2</u>	<u>Method 3</u>
Pre-Purchase Survey and Post-Purchase Questionnaire		Post-Purchase (Only) by Study's Interviewers	Post-Purchase (Only) by Stores' Salespeople
<u>Number</u>	144	160	128
<u>Age</u>	36	40	40
<u>Household Income (Thousands)</u>	28	28	32
<u>Education (% College Graduates)</u>	53	39	52
<u>Purchase Experience (In Product Category)</u>	1.8	1.9	1.9
<u>Retail Store Visits*</u>	5.3	3.9	3.7

Note a: At alpha=.01, no significant differences were expected or observed between respondents obtained by Method 2 and Method 3.

Note b: The pooled group of Method 2 and Method 3 respondents were then compared to the Method 1 respondents. As explained in the text, the Method 1 respondents visited a significantly greater number of stores ( $p < .01$ ).

Note c: The corresponding demographics for the population of Alachua County were as follows: Mean Age: 38 years; Mean Income: \$38,000; 35% College Graduates.

\* Significant difference at  $p < .01$ .

In addition, the respondents who completed only the post-purchase questionnaire were compared to the consumers who completed the pre-purchase survey as well as the post-purchase questionnaire. As indicated in Table 4-2, the data collection procedures did not affect the composition of the respective groups in terms of their age, income, education or previous purchase experience ( $p>.01$  for each of the paired comparisons). However, the consumers who were interviewed during their pre-purchase search were significantly (and predictably) different from the other respondents with respect to the extent of their retail shopping ( $p<.01$ ). The reason for this difference is as follows. Since the likelihood of a pre-purchase consumer being intercepted was directly related to the number of store visits that s/he made prior to purchase, this group of respondents (Method 1) will consist of a disproportionately large number of consumers who made multiple store visits. In contrast, neither of the other data collection methods injects this bias since the likelihood that a consumer was handed a Post-Purchase (only) Survey was independent of the number of his/her previous retail store visits. As a result, the Post-Purchase (only) respondents provide a lower and more representative estimate of consumers' search behavior.

In order to aggregate the two types of respondents in a meaningful way, a statistical adjustment is necessary. Recall that the likelihood of intercepting a Pre-purchase consumer was directly related to the number of store visits which s/he made. Therefore, in the regression analyses which incorporate the Method 1 sub-sample, each of these respondents is "weighted" by the inverse of the number of retail stores

which s/he visited. In this way, the resulting analyses produce estimates which better reflect the true population parameters.

Table 4-3 displays the demographics and search behavior of the respondents as a function of the product category in which their purchase was made. No demographic differences were expected or observed between these three groups.

#### Sub-samples

The following discussion explains the partitioning of the total sample into the sub-samples which were used to test the study's hypotheses. The following three factors dictated the respondents who were necessarily excluded from particular analyses:

1. Completion of only the post-purchase survey excluded respondents from certain analyses.
2. Purchase of a "store brand", which was available at only one outlet, excluded respondents from certain analyses.
3. Purchase of any specific appliance model, which was available at only one store, excluded respondents from certain analyses.

Figure 4-1 provides a summary of the sub-samples of respondents in terms of the three criteria noted above. It also indicates the analyses in which the respective sub-samples are incorporated. (See Figure 4-1).

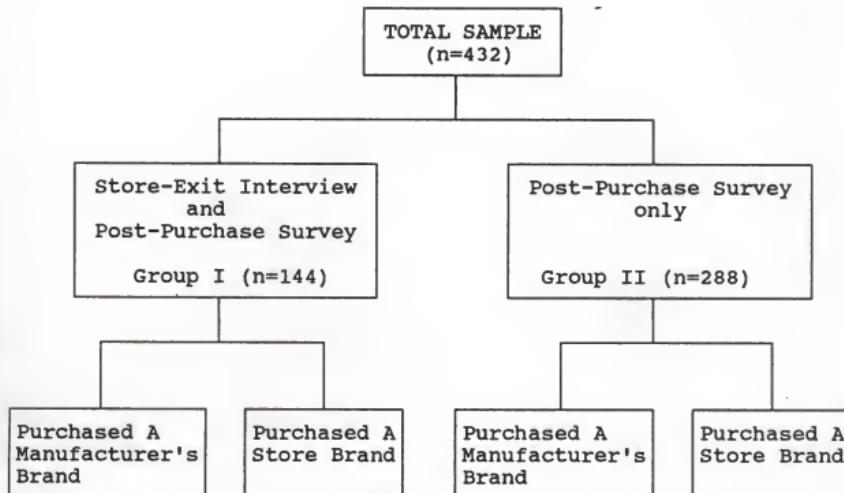
The first basis for splitting the sample was the stage in the shopping process at which the consumer was contacted. Some consumers (Group I; n=144) were interviewed during their pre-purchase search and completed the Post-Purchase Questionnaire while others (Group II; n=288) were surveyed only after the purchase was made. Consequently, consumers in Group II are excluded from the analyses which utilize any of the measures collected in the Pre-Purchase Survey.

Table 4-3  
Mean Sample Characteristics  
As a Function of the Product Purchased

	<u>Microwave</u>	<u>Television</u>	<u>VCR</u>
<u>Number</u>	73	206	153
<u>Age</u>	40	40	36
<u>Household Income</u> (Thousands)	28	30	29
<u>Education</u> (% College Graduates)	51	45	51
<u>Purchase Experience*</u> (In Product Category)	.52	3.3	.47
<u>Retail Store Visits</u>	4.0	4.3	4.5

Note: Purchase Experience was the only variable which differed significantly across product categories ( $p < .01$ ).

\* indicates a significant difference between groups ( $p < .01$ ).



Sub-samples Included in the Tests of the Formal Hypotheses

- Regression I: Perceived Price Range - Sub-samples IA1 and IIIA1.  
 Regression II: Subjective Cost of Search - Sub-samples IA1, IA2, IIIA1 and IIIA2.  
 Regression III: Price Search - Sub-samples IA1, IA2, IIIA1 and IIIA2.  
 Regression IV: Purchase Outcome - Sub-samples IA1 and IIIA1.

Figure 4-1

Sub-samples of Respondents

- Sub-samples Comprising Group I
- Sub-samples Comprising Group II

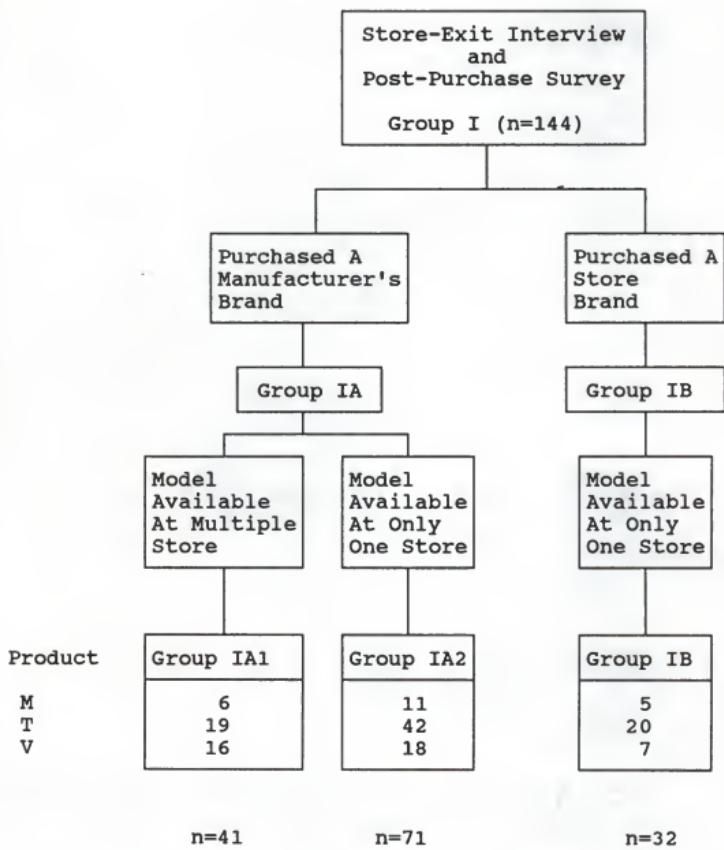


Figure 4-1 (Continued)

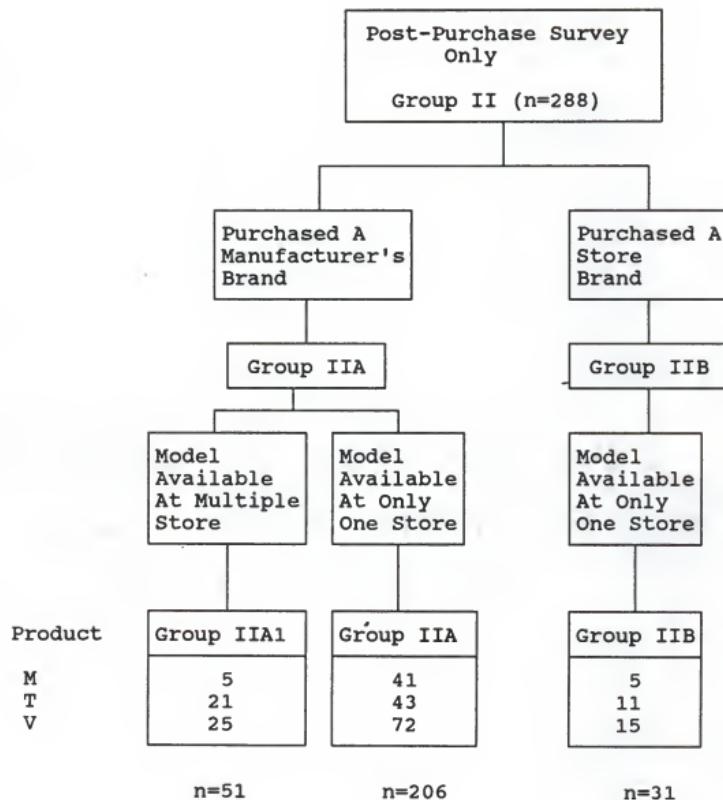


Figure 4-1 (Continued)

The second basis for dividing the respondents into sub-samples pertains to the brand of appliance which was purchased. Several of the analyses include variables which assume that the consumer's preferred brand was available at multiple stores (i.e. manufacturers' brands). However, some of the respondents purchased store brands (e.g. Sears) which were available at only one outlet. Within Group I (Pre-purchase and Post-purchase), the number of respondents who bought a manufacturer's brand (Group IA) was 112. The remaining 32 respondents within Group I bought a store brand (Group IB). Within Group II (Post-purchase Only), the number of respondents who bought a manufacturer's brand (Group IIA) was 257. The remaining 31 respondents within Group II bought a store brand (Group IIB). Figure 4-1 specifies the analyses which are restricted to include consumers who bought manufacturers' brands (e.g. a Panasonic VCR).

Finally, some of the analyses required the actual price variation of specific appliance models in the marketplace (e.g. Panasonic TV Model #1911). Consumers who purchased appliance models which were available at only one store were excluded from these analyses. Consequently, Groups IA and IIA are subdivided further into Groups IA1 and IA2, and IIA1 and IIA2 respectively.

In sum, Group I (n=144) is split into three sub-samples. Group IA1 consists of the 41 consumers who bought a specific model (of a manufacturer's brand) which was available at multiple stores. Group IA2 consists of the 71 consumers who bought a specific appliance model (of a manufacturer's brand) which was available at only one store. Group IB is comprised of the 32 consumers in Group I who bought a store brand.

Group II (n=288) is split in exactly the same way. The number of respondents in Group IIA1 is 51. Group IIA2 has 206 respondents. Group IIB has 31 respondents.

In the next section of the chapter the operationalizations of the study's central constructs are described. For constructs that were measured by more than one item, a table of the measures is provided and construct reliabilities are reported. The measures are presented in the order in which they were introduced into the proposed model (Chapter III).

### Measures

#### Explaining Consumers' Perceptions of the Price Variation of their Preferred Models

##### Perceived price range.

Normatively, each consumer should estimate the variance of prices of his preferred model in order to decide upon the optimal extent of price comparison shopping. However, casual observation and preliminary research suggested that consumers were more inclined to think in terms of the range of market prices.

Accordingly, after identifying the appliance brand and model that was purchased, each consumer was asked to estimate both the lowest and highest price at which this same model would be available at any store in Gainesville in the ensuing two week period. The difference was used to operationalize each consumer's perception of the range of prices that further search would uncover.

Perceptions of price variation over a two week period were used since consumers' decisions to pursue price savings should be a

function of the expected longitudinal, as well as cross-sectional, price variation. While a longer period may have been relevant to some consumers, the question might have become too abstract for other consumers producing a less reliable measure. Since previous research indicated that most consumers buy their durable goods within four weeks of considering the purchase, price perceptions were measured over a two week period in an effort to balance these considerations.

(See Table 4-4. Also Questions 41a. & 41b of the Post-Purchase Survey.)

The post-purchase measure of perceived price variation was used because the store-exit interview did not require the consumer to identify a specific model. In fact, one finds that consumers' pre-purchase estimates of the price range of their preferred models are highly correlated with their post-purchase estimates ( $r=.71$ ;  $p<.01$ ). This correlation was computed for the forty-seven consumers who purchased the same brand that they preferred at the time of the store-exit interview (sub-samples IA1 and IA2).

#### Predictors

Objective price variation. The actual prices of the appliance models which were available at more than one store were recorded for the duration of the study. In order to maintain correspondence with the foregoing measure, the objective price variation was operationalized in terms of the price range of each specific model over successive two week periods. For each model, these figures were averaged to obtain a single measure of the objective price variation. Note that one could have used the actual price variation during the specific two week period following

**Table 4-4**  
**Perceived Price Range**

<u>Measure:</u>	<u>Mean</u>	<u>Std</u>
		<u>Dev</u>
(Post-Purchase: n=361)		
Please estimate the lowest price at which this same model will be displayed at any store in Gainesville in the next two weeks.	\$306	157
Please estimate the highest price at which this same model will be displayed at any store in Gainesville in the next two weeks.	\$389	196
Perceived Price Range	\$83	77
Sub-samples IA1, IA2, II1A1 and II1A2.		

Perceived Price Range as a Function of Product Type

	<u>N</u>	<u>Mean</u>	<u>Std</u>
			<u>Dev</u>
Microwaves	63	\$55	45
Televisions	172	\$81	70
VCR's	127	\$100	93

the purchase. Instead, the average of several measures was employed to provide a more reliable estimate of this variable.

Objective Price Variation (n=90; sub-samples IA1 and IIA1)

Mean=\$66.8; Standard Deviation=35.5.

Absolute price. The absolute price is defined as the actual price that each consumer paid for his appliance.

(Question 40b--Post purchase survey):

What price (excluding tax, delivery or extended warranty) did you pay for your new appliance?

Absolute Price (n=363; Sub-samples IA, IB, IIA, IIB).

Mean=\$314; Standard Deviation=158.

Age. Each respondent's age was measured on a seven category scale.

(Question 54--Post purchase survey):

What was your age on your last birthday?

Less than 18 (0.5%) 18-24 (14.3%) 25-34 (31.9%)  
35-44 (21.1%) 45-54 (12.7%) 55-64 (11.1%) 65 or more (8.4%)

Each consumer's score on this ordinal scale was transformed to an interval measure for the purpose of predicting their perceived price range. The interval scale measure used the median age of the respondents who fell in the central five categories. Respondents in the two extreme categories were coded as seventeen and sixty-five years of age respectively.

(n=369; Sub-samples IA1, IA2, IIA1, IIA2.)

Perceived competition. Consumers may conceptualize competition at the brand level (e.g. the number of stores that sell Sony televisions). Alternatively, consumers may think in terms of the specific model for which they are shopping (e.g. Sony television: Model #1981). Therefore,

two measures of each consumer's perception of competition were collected. The two measures were standardized and summed to form a composite variable representing perceived competition. (See Table 4-5. Also Question 38b, 39a--Post purchase survey.)

Use of external memory. Most consumers appear to rely solely on their ability to remember item price information. Alternatively, a consumer may keep written records (i.e. external memory) of the item prices that he finds of interest at each store. A single (dichotomous) question measured whether consumers were recording the prices that they found in each store. (Question 5--Exit interview)

Do you happen to be keeping any written records of the prices that you find at each store?

Mean=.30 (n=112; Sub-samples IA1, IA2)

Explaining Consumers' Subjective Cost of Price Comparison Shopping

Subjective cost of search.

The subjective cost of search represents the amount of money that a consumer would have to expect to save in order to spend an extra hour comparing prices of his preferred model. However, many consumers had difficulty responding to pretest questions which were structured in this way. Therefore, each respondent was asked for the amount of time that he would be willing to spend comparing prices on his preferred model in order to save a given sum (e.g. \$40; \$20) on his purchase price. (See Table 4-6. Also Questions 46a & 46b--Post purchase survey.)

To determine each consumer's subjective cost of search, the foregoing measures were transformed. For example, a consumer who indicated that he would spend four hours to save forty dollars had an

Table 4-5  
Perceived Competition

<u>Measure:</u>	<u>Mean</u>	<u>Std Dev</u>
1. At how many stores do you think that this brand was available in Gainesville?	5.72	4.56
2. At how many stores do you think that this specific model was available?	3.79	2.64

Inter-item correlation:  $r=.74$  (n=304)

Sub-samples IA1, IA2, IIIA1 and IIIA2

Note a: A few consumers provided unreasonably high estimates of the number of stores in the marketplace (e.g. 40). In order to prevent these outliers from exerting undue influence on the analyses, these responses were recoded. The extreme estimates of the number of competitors were restricted to equal the response by consumers in the ninety-ninth percentile. For brand competition the maximum (recoded) estimate was twenty. For model competition the maximum (recoded) estimate was ten.

Note b: The inter-item correlation of the original (untransformed) variables was virtually the same ( $r=.74$ ).

Table 4-6  
Subjective Cost of Search

<u>Measure:</u>	<u>Mean</u> (in hours)	<u>Std</u> <u>Dev</u>
(Assume that you could have purchased the model that you bought for less.)		
1. How much more time would you have been willing to spend shopping in order to save an extra \$40 on your purchase price?	1.88	2.07
2. How much more time would you have been willing to spend shopping in order to save an extra \$20 on your purchase price?	0.95	1.07

Inter-item correlation:  $r=.78$  (n=365)

Sub-samples IA1, IA2, IIA1, IIA2.

Note a: To determine each consumer's subjective cost of search, the foregoing measures were transformed. For example, a consumer who indicated that he would spend four hours to save forty dollars had an implied cost of search of \$10 per hour. The two items were then standardized and averaged to form a composite measure of each consumer's subjective cost of search. If a consumer responded zero hours to the original question, the subjective cost of search was set to \$60 per hour.

Note b: The inter-item correlation of the transformed variables was  $r=.81$ .

Note c: Question 1 above was also asked on the Pre-Purchase survey. The test-retest reliability was  $r=.54$  (n=108).

implied cost of search of \$10 per hour. The two transformed variables were standardized and averaged as the composite measure of the subjective cost of search.

### Predictors

Wage rate. Each respondent was asked for his hourly wage rate. (Question 59c--Post purchase survey).

Approximately what is your hourly wage rate? \$/hr.

Mean \$11.83 Standard Deviation \$9.54  
(n=241; Sub-samples IA1, IA2, IIA1 and IIA2)

Physical effort of shopping. The physical effort of shopping for appliances includes travelling to stores as well as walking around and inspecting various models. Accordingly, the perceived (physical) effortfulness of shopping was measured on each of these dimensions and a third composite measure.

(See Table 4-7. Also Questions 24a,b,c--Post purchase survey.)

Mental effort of shopping. The mental effort of shopping for appliances includes talking with salespeople and making tradeoffs between models. Accordingly, the perceived (mental) effortfulness of shopping was measured on each of these dimensions and a third composite measure. (See Table 4-7. Also Questions 25a,b,c--Post purchase survey.)

Enjoyment of shopping. In shopping for appliances, a consumer might enjoy gathering information, talking to salespeople or visiting stores. Accordingly, the enjoyment of shopping was measured on each of these dimensions and a fourth composite measure. See Table 4-7. Also Questions 26a,b,c,d--Post purchase survey.)

Table 4-7  
Factors Affecting the Subjective Cost of Search

<u>Measure:</u>	<u>Mean</u>	<u>Std Dev</u>
<u>Physical Effort:</u>		
1. Travelling to a store requires a lot of physical effort.	3.08	1.82
2. Walking around in a store requires a lot of physical effort.	2.73	1.72
3. Overall, a single store visit requires a lot of physical effort.	2.55	1.65

The construct reliability is indicated by alpha=.88 .

Mental Effort:

1. Comparing the various models in a store requires a lot of mental effort.	4.01	1.88
2. Talking with the salesperson in a store requires a lot of mental effort.	3.77	1.88
3. Overall, a single store visit requires a lot of mental effort.	3.29	1.81

The construct reliability is indicated by alpha=.85 .

Enjoyment

1. I really enjoy gathering information before I make a purchase.	4.57	1.90
2. I really enjoy visiting stores before I make a purchase.	4.00	2.07
3. I really enjoy talking to salespeople before I make a purchase.	3.79	1.91
4. Overall, I really enjoy shopping before I make a purchase.	4.17	1.97

The construct reliability is indicated by alpha=.81 .

(For each of the three constructs:

n=369; Sub-samples IA1, IA2, IIA1 and IIA2)

Note: These items was measured on a seven point scale on which "1" was Disagree Strongly and "7" was Agree Strongly.

### Explaining Consumers' Search for Price Information

#### Consumers' search for price information.

Consumers can acquire price information in several different ways. In addition to visiting stores, consumers can call stores, call mail-order companies, examine store catalogs, query acquaintances and/or read ads. Consumers' total search for price information was defined as the sum of the number of times that consumers used each of these sources of price information. (See Table 4-8. Also Questions 17a. to 22a.--Post purchase survey.)

#### Predictors

Confidence in price images (of Retail stores). Confidence in price images refers to consumers' certainty that they knew which stores had the best appliance prices even before they began shopping. (See Table 4-9. Also Question 35--Post purchase survey.)

Even before I began shopping, I was sure about which stores had the best appliance prices in Gainesville.

Mean=4.07; Standard Deviation=2.02  
(n=362; Sub-samples IA1, IA2, IIIA1 and IIIA2).

Belief in a price-quality association. Consumers who believe that a strong price-quality association exists may be willing to infer a brand's quality from its price. This would mitigate the need for inter-brand price comparisons once an acceptable level of quality was found. (See Question 36--Post purchase survey.)

In general, the price of an appliance tells me a lot about its quality.

Mean=3.56; Standard Deviation=1.74

(n=362; Sub-samples IA1, IA2, IIIA1 and IIIA2).

Table 4-8  
Search for Price Information

<u>Measure</u>	<u>Mean</u>	<u>Std Dev</u>
a. How many stores, if any, did you call on the telephone to ask about specific prices?	0.52	1.33
b. How many mail order companies, if any, did you call on the telephone to ask about specific prices?	0.04	0.18
c. In how many store catalogues, if any, did you look for specific prices?	0.99	1.49
d. How many friends or relatives, if any, did you ask about specific prices?	0.98	1.44
e. From how many newspaper ads, if any, did you obtain information about specific prices?	2.82	3.80
f. At how many of the stores that you visited did you check the price of one (or more) of the brands that you had already checked at another store?	2.49	2.26
The preceding items were summed as a measure of consumers' total search for price information.	7.84	6.34

Cronbach alpha=0.44

(n=369; Sub-samples IA1, IA2, IIA1 and IIA2)

Table 4-9  
Confidence in Price Images of Retail Stores

<u>Measure:</u>	<u>Mean</u>	<u>Std Dev</u>
-----------------	-------------	--------------------

(Post-Purchase)

1. Even before I began shopping, I was sure about which stores had the best appliance prices in Gainesville. 4.07 2.02

(n=369; Sub-samples IA1, IA2, IIA1 and IIA2)

(Pre-Purchase)

1. Even before I began shopping, I was sure about which stores had the best appliance prices in Gainesville. 3.90 1.90

(n=112; Sub-samples IA1 and IA2)

Test-retest reliability is indicated by  $r=.46$ .

Note: These items were measured on a seven point scale on which "1" was Disagree Strongly and "7" was Agree Strongly.

Purchase experience. Purchase experience is defined as the number of purchases that the respondent had made previously in the same product category (e.g. televisions). (Question 49--Post purchase survey.)

How many appliance purchases have you made previously (not counting this one)?

Mean: 1.91 Standard Deviation: 2.58  
(n=363; Sub-samples IA1, IA2, IIA1 and IIA2)

Loyalty. Loyalty with respect to either a brand or store was operationalized in terms of repeat purchase. (See Table 4-10. Also Questions 50b,c--Post purchase survey.)

Product expertise. Product expertise was defined in terms of consumers' subjective ability to evaluate the quality of the various brands by inspection.

(See Table 4-11. Also Question 37--Post purchase survey.)

Price importance. Three items were used to gauge the psychological importance of obtaining a good deal to each consumer. (See Table 4-12. Also Questions 31, 32, 33--Post purchase survey.)

#### Shopping strategies.

Two possible strategies which consumers might substitute for searching for price information are as follows:

Price negotiation. Two items were used to determine whether the consumer had undertaken price negotiation in making the appliance purchase. (Questions 42b,c--Post purchase survey. Also see Table 4-13.)

Buy on sale. A single item was used to measure whether the consumer made the purchase at a "sale" price. (Question 42a.--Post purchase survey.)

Table 4-10  
Loyalty

<u>Measure:</u>	<u>Mean</u>	<u>Std</u>
		<u>Dev</u>

Store Loyalty

The consumer was defined to be store loyal if the store at which the current appliance was purchased was the same as the store at which the previous appliance was bought. .06 .24

(n=369; Sub-samples IA1, IA2, IIIA1 and IIIA2)

Brand Loyalty

The consumer was defined to be brand loyal if the brand purchased was the same as the brand bought most recently. .09 .28

(n=369; Sub-samples IA1, IA2, IIIA1 and IIIA2)

Note: Both of these items were dichotomous (i.e. either 0 or 1).

Table 4-11  
Product Expertise

<u>Measure:</u>	<u>Mean</u>	<u>Std Dev</u>
(Post-Purchase)		
1. It is difficult to evaluate the various brands of appliance even after examining them.	4.53	1.80
(n=369; Sub-samples IA1, IA2, IIA1 and IIA2)		
(Pre-Purchase)		
1. It is difficult to evaluate the various brands of appliance even after examining them.	4.44	1.70
(n=112; Sub-samples IA1 and IA2)		

Test-retest reliability is indicated by  $r=.50$ ;  $n=112$ .

Note a: This item was reverse scored. Thus, consumers who reported difficulty in evaluating the various brands would score low on product expertise.

Note b: These items were measured on a seven point scale on which "1" was Disagree Strongly and "7" was Agree Strongly.

Table 4-12  
Price Importance

<u>Measure:</u>	<u>Mean</u>	<u>Std Dev</u>
1. I prefer to buy products like appliances at a store where I've shopped before even if I have to pay a higher price.	5.03	1.94
2. As long as I get the appliance model that I want at a good price, then getting that model at the best price in town really is not very important to me.	4.42	2.00
3. I seem to get more satisfaction than most people from getting the best possible deal on the model that I buy.	4.39	1.84

The construct reliability is indicated by alpha=.51 .  
 (n=369; Sub-samples IA1, IA2, IIA1 and IIA2)

Note a: Measures one and two were reverse scored so that a higher (transformed) score indicates a greater degree of "price importance."

Note b: These items were measured on a seven point scale on which "1" was Disagree Strongly and "7" was Agree Strongly.

Table 4-13  
Price Negotiation

<u>Measure:</u>	<u>Mean</u>	<u>Std Dev</u>
1. Did you negotiate a lower price (talk the salesman into a special price deal)?	.14	.35
2. Before buying your appliance, did you make any specific price offers that were refused by the salesman? For example: I'd buy that appliance if you would let me have it for \$400.	.08	.27

The inter-item correlation was  $r=.27$  ( $p<.01$ ).  
 (n=366; Sub-samples IA1, IA2, IIA1 and IIA2)

Note: Both of these items were dichotomous.

Did you happen to buy your appliance at a "sale" price?

Mean=.76; Standard Deviation=.43

(n=352; Sub-samples IA1, IA2, IIA1, IIA2)

Two other predictors of consumers' search for price information--Perceived Price Variation and Subjective Cost of Search--were discussed previously.

#### Explaining Consumers' Purchase Outcomes

##### Consumers' purchase outcomes.

Two measures of consumers' purchase outcomes were collected. The first measure was the difference between the price that a consumer paid for his/her appliance and the lowest price which any consumer in the sample paid for that same item (i.e. holding brand and model constant). Accordingly, each respondent was asked to indicate the specific brand and model that was purchased. Consumers were also asked for the price paid excluding the tax, extended warranty, or any delivery charges. (Questions 38a, 39a, 40b--Post purchase survey. See Table 4-14.)

The price that a consumer paid for his/her appliance was also compared to the lowest price at which that same item was available in Gainesville during the survey period. This second measure recognizes that (all of) the consumers in the sample who happened to purchase a particular item may have achieved poor purchase outcomes. The two items were standardized and summed as a composite measure of each consumer's purchase outcome. (See Table 4-14.)

##### Predictors

Education. Each respondent's formal education was measured on a six category scale. (Question 58--Post purchase survey.)

Table 4-14  
Purchase Outcomes

<u>Measure:</u>	<u>Mean</u>	<u>Std Dev</u>
1. Price paid for a specific appliance relative to the lowest price paid for that same item by any other consumer in the sample.	20.88	21.50
2. Price paid for a specific appliance relative to the lowest price at which that same item was available in Gainesville during the survey period.	23.52	21.99

The inter-item correlation was  $r=.67$  ( $p<.01$ ).  
( $n=75$ ; Sub-samples IAI and IIAI).

What is the highest grade or level of education that you have completed? (Please check one.)

8th grade or less	(0.5%)	Grades 9-11	(29.5%)
High School Graduate	(2.4%)	1-3 years of college	(18.4%)
Graduated College	(20.1%)	Some Graduate School	(22.0%)

For the purpose of predicting consumers' purchase outcomes, education was treated as a dichotomous variable. Consumers who had not completed college were categorized as low education. The remaining consumers were categorized as high education.

(n=369; Sub-samples IA1, IA2, IIA1 and IIA2)

Deliberation. Deliberation was defined as the time period between first considering the purchase and the date of actual purchase. It was measured on a six category scale. (Question 48--Post-purchase survey.)

How long was it from the time that you first considered purchasing your new appliance until the time you actually made the purchase?

Same Day	(13.0%)	Less than a week	(14.3%)
1-4 weeks	(15.4%)	5-12 weeks	(15.4%)
3-6 months	(29.7%)	Over six months	(12.2%)

For the purpose of predicting consumers' purchase outcomes, deliberation was also treated as a dichotomous variable. Consumers who deliberated for four weeks or less were categorized as low deliberation. The remaining consumers were categorized as high deliberation.

(n=369; Sub-samples IA1, IA2, IIA1 and IIA2)

Four additional predictors of each consumer's Purchase Outcome: Price Search, Use of External Memory, Price Negotiation and Buy on Sale, were discussed previously.

## CHAPTER V RESULTS

This chapter is divided into three sections. It begins by testing the formal hypotheses which were proposed in the model in Chapter III. In the second section, two more speculative hypotheses pertaining to the mean level of consumers' search are examined. The third section provides a more detailed description of consumers' search for price information.

### Tests of Formal Hypotheses

The model incorporating each of the proposed relationships is shown in Figure 5-1 and represented by the following set of equations:

1. Perceived Price Range:  $f(\text{objective price range}; \text{absolute price}; \text{estimate of the number of competitors}; \text{age}; \text{use of external memory})$ .
2. Subjective Cost of Search:  $f(\text{wage rate}; \text{physical effort of shopping}; \text{mental effort of shopping}; \text{enjoyment associated with shopping})$ .
3. Search for Price Information:  $f(\text{perceived price range}; \text{subjective cost of search}; \text{confidence in price images}; \text{belief in a price/quality relationship}; \text{price importance}; \text{purchase experience}; \text{product expertise}; \text{shopping strategy}; \text{loyalty})$ .
4. Purchase Outcome:  $f(\text{search for price information}; \text{use of external memory}; \text{education}; \text{shopping strategy}; \text{product expertise}; \text{shopping strategy})$ .

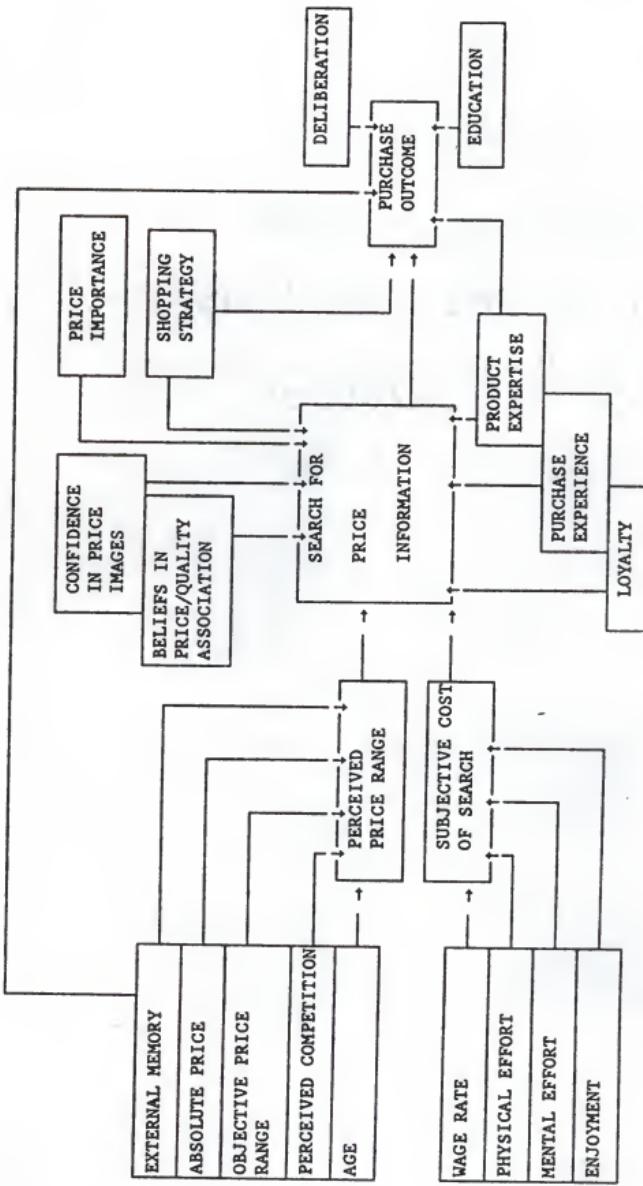


Figure 5-1  
The Proposed Model

Since this system of equations is recursive, the parameters are estimated using Ordinary Least Squares (Wonnacott and Wonnacott, 1978). The results are organized and presented by dependent variable.

Consumers' Estimates of the Price Range of their Preferred Models (Perceived Price Range)

Two of the central propositions of this dissertation were that consumers' price perceptions could help explain both the variation in consumers' search and the low mean level of search. Accordingly, the factors which were expected to affect consumers' estimates of the price range of their preferred models were examined. Consumers' estimates of the price range of their preferred models were expected to be affected by the objective price range, the absolute price, the consumer's perception of the number of competitors, the consumer's age, and the consumer's use of external memory.<sup>1</sup> The results are in Table 5-1. Figure 5-2 displays this section of the proposed model.

Tables 5-1 and 5-2 show the results when the aggregate sample is partitioned by sampling methods and products respectively. In each case the Chow Test (Chow, 1960) indicated that the sub-groups did not differ significantly.<sup>2</sup> Table 5-3 provides the correlation matrix of the variables included in this analysis.

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<sup>1</sup> Only 41 consumers who completed the Store-Exit Interview purchased an appliance model which was available at more than one store. Since the only variable from the Store-Exit Interview which would have been included in this analysis was the Use of External Memory and this variable was not significantly correlated with the criterion, this measure was dropped from the regression analysis.

<sup>2</sup> The significance level for each of the (8) Chow Tests reported was set at  $\alpha=.01$  to control for family-wise error.

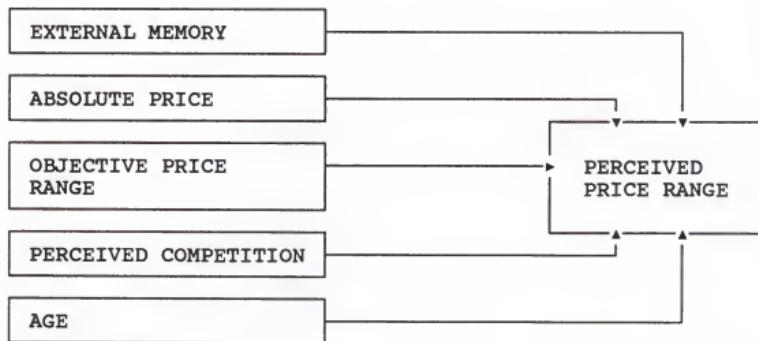


Figure 5-2  
Explaining Consumers' Price Perceptions

Table 5-1  
Dependent Variable: Perceived Price Range

Variable	Total Sample	Sub-Sample	
		IAl	IIAl
Intercept	19.58 (0.77)	31.64 (0.87)	8.57 (0.24)
Perceived Competition	9.14 (3.04)***	-11.08 (-1.52)	11.12 (2.92)***
Age	-0.02 (-0.05)	-0.32 (-0.47)	0.13 (0.21)
Objective Price Range	-0.05 (-0.22)	0.44 (1.40)	-0.07 (-0.18)
Absolute Price	0.18 (2.20)**	0.11 (1.09)	0.18 (1.46)
R <sup>2</sup> (adjusted)	0.14	0.09	0.20
F-statistic	F(4,68) 3.96***	F(4,32) 1.84	F(4,31) 3.17*
Q-statistic (Chow Test)	1.45 p>.01		

Note a: Entries are regression coefficients. Values in parentheses are the corresponding t-statistics.

\* : p <.10  
 \*\* : p <.05  
 \*\*\*: p <.01

Note b: Collinearity diagnostics were run on each of the predictor variables in the total sample regression. In no case did the Variance Inflation Factor (SAS Statistics, 1985) approach the level where multicollinearity is considered to be a problem.

Table 5-2  
Dependent Variable: Perceived Price Range

Variable	Total Sample	Product	
		M or V <sup>a</sup>	T
Intercept	19.58 (0.77)	58.83 (1.95)*	-14.14 (-0.33)
Perceived Competition	9.14 (3.04)***	2.15 (0.49)	8.82 (1.89)*
Age	-0.02 (-0.05)	-0.28 (-0.47)	-0.19 (-0.28)
Objective Price Range	-0.05 (-0.22)	0.15 (0.62)	0.09 (0.17)
Absolute Price	0.18 (2.20)**	-0.01 (-0.09)	0.32 (2.31)**
R <sup>2</sup> (adjusted)	0.14	-0.07	0.25
F-statistic	F(4,68) 3.96***	F(4,35) 0.36	F(4,28) 3.64***
Q-statistic (Chow Test)	1.61 p>.01		

Note a: Microwaves and VCR's were pooled in the separate product analyses because the sample size of microwave buyers was insufficient to estimate the parameters for that sub-group.

Note b: Entries are regression coefficients. Values in parentheses are the corresponding t-statistics.

\* : p <.10

\*\* : p <.05

\*\*\*: p <.01

Table 5-3

## Correlation Matrix of Variables in Regression 1

Variable	Mean	Std Dev	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$	$\bar{X}_4$	$\bar{X}_5$
Perceived Price Range ( $X_1$ )	82.70	64.70					
Perceived Competition ( $X_2$ )	9.51	6.75	0.11				
Age ( $X_3$ )	39.20	14.10	0.03	0.20*			
Objective Price Range ( $X_4$ )	67.00	35.60	0.19	0.12	0.02		
Absolute Price ( $X_5$ )	315.00	158.00	0.33***	-0.11	0.05	0.32***	
External Memory ( $X_6$ )	0.30	0.46	0.19	-0.20	-0.01	-0.05	0.18

\* p <.10  
\*\* p <.05  
\*\*\* p <.01

Note: n=73 except for the correlations with External Memory where n=41.

Seventy-three consumers completed the required measures. The regression was statistically significant ( $p < .01$ ) and accounted for 14% of the variation in the criterion variable. The significance of each predictor variable is used to evaluate the corresponding hypothesis.<sup>3</sup>

#### Objective price range

H1 proposed that the objective price range would have a positive effect on consumers' perceived price range. The regression results failed to reject the null hypothesis ( $t < 1$ ). Moreover, the simple correlation between the perceived and objective price variation was only marginally significant ( $p = .10$ ). These results indicated that consumers were not as aware of the market price variation as had been expected.

#### Absolute price

H2 proposed that the absolute price of a consumer's preferred appliance model would have a positive effect on the consumer's perceived price range of that model. The results supported this hypothesis ( $t = +2.20$ ;  $p < .05$ ). For every fifty dollar increase in the absolute price of an appliance, consumers' estimates of the price range increased by approximately nine dollars. The simple correlation between absolute price and perceived price range was also highly significant ( $r = .33$ ;  $p < .01$ ). Thus, consumers appear to be using the absolute price of the chosen model to estimate its price range.

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<sup>3</sup> An analysis was conducted to determine whether any single observation was unduly influential (SAS Influence Diagnostics). One influential observation was identified and omitted from the analysis. The only predictor variable which was statistically significant in the original analysis (Perceived Competition) remained so. In addition, Absolute Price emerged as a significant predictor of the Perceived Price Range.

Use of external memory

H3 proposed that use of external memory would have a positive effect on consumers' estimates of the price range of their preferred models. We were unable to reject the null hypothesis ( $r=.17$ ;  $p>.20$ ).

Perception of the number of competitors

H4 proposed that the number of competitors of which consumers were aware would have a positive effect on their estimates of the price range of their preferred models. The results supported this hypothesis ( $t=+3.04$ ;  $p<.01$ ). For each additional store which was perceived to carry the preferred brand or model, consumers' estimates of the price range increased by an average of three dollars.

Age

H5 proposed that age would be inversely related to consumers' estimates of the price range. This would help explain why several previous studies have found that search varies inversely with age. However, there was no apparent relation between age and perceived price variation ( $t<1$ ). Thus, we were unable to reject the null hypothesis.

Consumers' Subjective Cost of Search

Studies based upon the economics of information often use consumers' wage rates as a surrogate for the cost of their leisure time. However, shopping for appliances may have distinctive characteristics which affect the way that consumers value such time. Accordingly, this study examined the extent to which consumers' subjective cost of search could be explained by their wage rates as well as three additional

variables that were expected to distinguish shopping from other forms of leisure.

Consumers' subjective cost of search was regressed against: the shopper's wage rate; physical effort of shopping; mental effort of shopping; and enjoyment of shopping. Two hundred forty-one consumers provided responses to this set of variables. The proposed model was statistically significant ( $p < .001$ ) and accounted for 10% of the variation in the criterion variable. The significance of each predictor variable is used to evaluate the corresponding hypothesis. The results are in Table 5-4. Figure 5-3 displays this section of the proposed model.

Tables 5-4 and 5-5 show the results when the aggregate sample is partitioned by sampling methods and products respectively. In each case the Chow Test indicated that the regressions did not differ significantly across sub-samples. Table 5-6 provides the correlation matrix of the variables included in this analysis.

#### Wage rate

H6 predicted that consumers' wage rates would have a positive effect on their subjective cost of search. This hypothesis was strongly supported ( $t = 3.00$ ;  $p < .01$ ). Specifically, for every one dollar increment in the consumer's wage rate, the subjective cost of search increased by thirty-seven cents<sup>4</sup>. Note, however, that the correlation between wage rate and search cost was statistically significant ( $r = .22$ ;  $p < .01$ ) but

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<sup>4</sup> Due to the fact that the measure of subjective cost of search has been standardized, the magnitude of the effect of wage rate reported in the text can not be inferred directly from the regression coefficient which appears in Table 5-4.

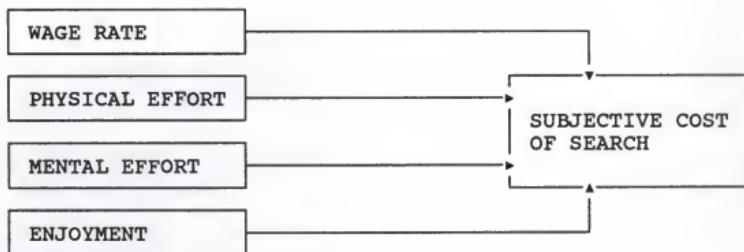


Figure 5-3  
Explaining Consumers' Subjective Cost of Search

Table 5-4  
Dependent Variable: Subjective Cost of Search

<u>Variable</u>	<u>Total Sample</u>	<u>Sub-Sample</u>			
		<u>IA1</u>	<u>IA2</u>	<u>IIA1</u>	<u>IIA2</u>
Intercept	-0.39 (-2.03)**	-0.35 (0.73)	-0.88 (-2.25)**	0.46 (-0.56)	-0.34 (-1.19)
Wage Rate	0.04 (3.00)***	0.03 (1.51)	0.06 (2.44)**	0.03 (0.51)	0.04 (2.05)**
Physical Effort	0.02 (0.32)	0.20 (1.26)	0.10 (0.73)	-0.09 (-0.40)	0.01 (0.22)
Mental Effort	-0.06 (-1.16)	-0.03 (0.17)	0.12 (0.94)	-0.03 (-0.12)	-0.07 (-0.98)
Enjoyment	-0.15 (-3.88)***	0.10 (0.86)	0.03 (0.32)	-0.13 (-1.23)	-0.18 (-3.45)***
R2 (Adjusted)	0.10	0.04	0.06	0.04	0.11
F-Statistic	F(4, 236) 7.34***	F(4, 26) 1.31	F(4, 42) 1.79	F(4, 26) 0.68	F(4, 127) 5.235***
Q-Statistic (Chow Test)	1.40 p>.01				

Note a: Entries are regression coefficients. Values in parentheses are the corresponding t-statistics.

\*\*\*: p < 0.01

\*\*: p < 0.05

\*: p < 0.10

Note b: Collinearity diagnostics were run on each of the predictor variables in the total sample regression. In no case did the Variance Inflation Factor (SAS Statistics, 1985) approach the level where multicollinearity is considered to be a problem.

**Table 5-5**  
Dependent Variable: Subjective Cost of Search

<u>Variable</u>	<u>Product</u>			
	<u>Total</u> <u>Sample</u>	<u>M</u>	<u>T</u>	<u>V</u>
Intercept	-0.39 (-2.03)**	-0.44 (-0.64)	-0.45 (-1.76)*	-0.28 (-0.80)
Wage Rate	0.04 (3.00)***	0.02 (0.28)	0.04 (2.59)***	0.03 (1.29)
Physical Effort	0.02 (0.32)	0.25 (1.83)*	-0.04 (-0.54)	-0.04 (-0.48)
Mental Effort	-0.06 (-1.16)	-0.01 (-0.04)	0.01 (0.10)	-0.16 (-1.92)*
Enjoyment	-0.15 (-3.88)***	-0.15 (-1.58)	-0.14 (-2.61)***	-0.15 (-2.23)**
R <sup>2</sup> (Adjusted)	0.10	0.20	0.11	0.10
F-Statistic	F(4, 236) 7.34***	F(4, 31) 3.20**	F(4, 108) 4.39***	F(4, 87) 3.43**
Q-Statistic (Chow Test)	2.78 p>.01			

Note: Entries are regression coefficients. Values in parentheses are the corresponding t-statistics.

\*\*\*: p < 0.01

\*\*: p < 0.05

\*: p < 0.10

Table 5-6

## Correlation Matrix of Variables in Regression 2

Variable	Mean	Std Dev	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$	$\bar{X}_4$
Subjective Cost of Search ( $X_1$ )	28.50	15.70				
Wage Rate ( $X_2$ )	11.80	9.50		.22***		
Physical Effort of Shopping ( $X_3$ )	2.78	1.51	-.01		-.03	
Mental Effort of Shopping ( $X_4$ )	3.72	1.62	-.08	-.02		.50***
Enjoyment of Shopping ( $X_5$ )	4.24	1.57	-.21***	-.11*	.01	.08

\*  $p < .10$   
 \*\*  $p < .05$   
 \*\*\*  $p < .01$

Note: n=241 for each correlation.

not as high as one might have expected. This suggests that factors other than foregone income also affect the way that consumers value their time.

#### Mental effortfulness of shopping

H7 proposed that mental effort would have a positive effect on consumers' subjective cost of search. The theoretical basis for this hypothesis was that activities which were mentally effortful would detract from the resources which a person has available for alternative leisure or (paid) labor and therefore require greater compensation. However, we were unable to reject the null hypothesis ( $t=-1.16$ ;  $p>.20$ ).

#### Physical effortfulness of shopping

H8 proposed that the physical effortfulness of shopping would have a positive effect on consumers' subjective cost of search. We were unable to reject the null hypothesis ( $t<1$ ). It appears that the physical effort required by shopping is not an important component of consumers' subjective cost of search.

#### Enjoyment of shopping

H9 proposed that consumers who enjoy shopping should place relatively lower opportunity cost on such activity. The results supported this hypothesis strongly ( $t=-3.88$ ;  $p<.01$ ). This indicates that consumers who enjoy shopping may place a significantly lower opportunity cost on such time.

#### Consumers' Search for Price Information

In addition to describing consumers' search for price information (hereafter price search), this study sought to explain the extent of

their total price search. Price search was defined in terms of the sum of phone calls to stores (to acquire price information), phone calls to mail order vendors, examining store catalogs, asking acquaintances, reading newspaper ads and comparing prices by visiting stores. Price search was regressed against: the perceived price range of the preferred model; consumers' subjective cost of search; consumers' confidence in price images; consumers' belief in a price-quality relationship; price importance; shopping strategy; purchase experience; loyalty; and product expertise.

Three hundred fifty-one consumers completed the necessary measures. The regression was statistically significant ( $p < .001$ ) and explained 10% of the variation in the criterion variable. The significance of each predictor variable is used to evaluate the corresponding hypothesis. The results are in Table 5-7. Figure 5-4 displays this section of the proposed model.

Tables 5-7 and 5-8 show the results when the aggregate sample is partitioned by sampling methods and products respectively. Both of the accompanying Chow Tests indicate that the regressions for the individual sub-samples differ significantly ( $p < .01$ ). Consequently, a brief discussion of the origin of these differences is presented before considering the results of the aggregate sample. Table 5-9 provides the correlation matrix of the variables included in the aggregate analysis.

#### Unexpected Chow test results

The conceptual framework presented in this dissertation did not predict any differences in respondents' price search as a function of the sampling method or product purchased. However, the regression

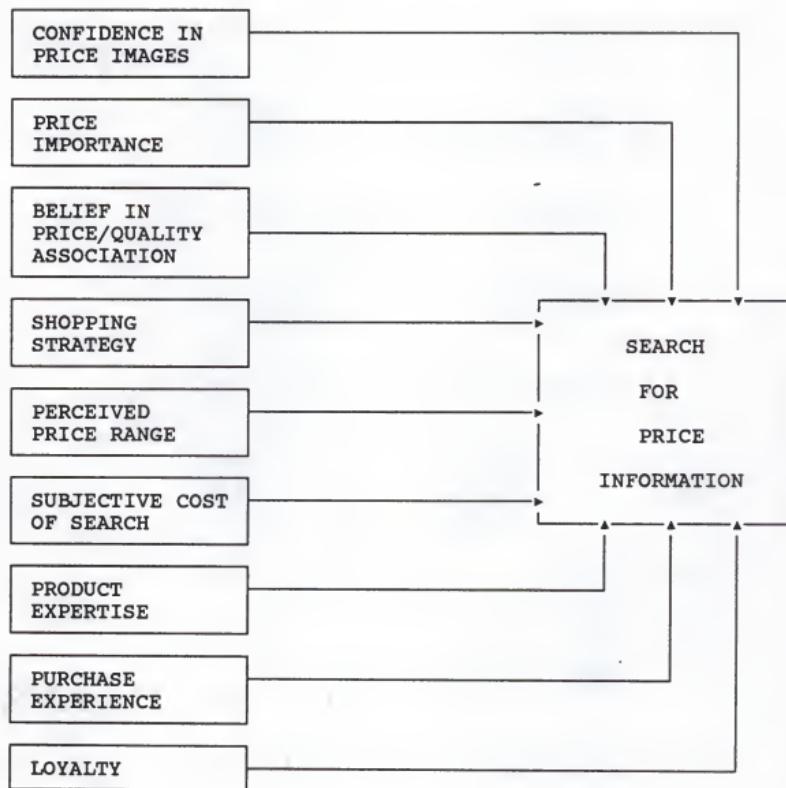


Figure 5-4  
Explaining Consumers' Search for Price Information

**Table 5-7**  
Dependent Variable: Price Search

<u>Variable</u>	<u>Total Sample</u>	<u>Sub-Sample</u>			
		IA1	IA2	IIA1	IIA2
Intercept	9.23 (6.95)***	10.04 (1.26)	7.23 (2.10)**	9.67 (2.07)**	8.62 (5.18)***
Perceived Price Range	0.01 (2.02)**	0.02 (-1.34)	-0.00 (-0.33)	0.01 (0.88)	0.01 (1.54)
Subjective Cost of Search	-0.61 (-3.66)***	0.42 (0.74)	1.21 (2.46)**	-0.51 (-1.15)	-0.61 (-2.65)**
Confidence In Price Images	0.08 (0.52)	-0.32 (-0.55)	1.33 (3.16)***	-0.29 (-0.69)	-0.04 (-0.69)
Price-Quality Inference	-0.19 (-1.06)	0.25 (0.33)	-0.46 (-1.07)	0.60 (1.05)	-0.20 (-0.88)
Price Importance	0.04 (0.26)	0.20 (0.35)	-0.03 (-0.07)	0.76 (1.82)*	0.02 (0.11)
Price Negotiation	0.24 (1.27)	1.28 (1.57)	1.60 (1.72)*	0.66 (1.31)	0.11 (0.44)
Purchase Experience	-0.52 (-4.46)***	-1.04 (-3.97)***	-1.11 (-3.38)***	-0.22 (-0.74)	-0.47 (2.97)***

Table 5-7 (Continued)

<u>Variable</u>	<u>Total</u>	<u>Sub-Sample</u>			
		<u>IA1</u>	<u>IA2</u>	<u>IIA1</u>	<u>IIA2</u>
Store Loyalty	2.21 (1.46)	-0.02 (-0.01)	-2.57 (-0.84)	-4.12 (-0.61)	3.90 (1.93)*
Brand Loyalty	-0.22 (-0.17)	1.37 (0.16)	7.48 (3.18)***	2.46 (0.40)	-1.64 (-0.93)
Expertise	-0.37 (-2.17)**	0.90 (1.48)	-0.79 (-2.02)**	-0.83 (-1.65)	-0.18 (-0.78)
Buy On-Sale	0.13 (0.19)	-5.08 (0.91)	5.36 (2.78)***	1.41 (0.74)	-0.02 (-0.02)
R <sup>2</sup> (Adjusted)	0.10	0.36	0.45	0.19	0.07
F-Statistic	F(11,339)*** 4.65	F(11,28)** 2.97	F(11,55)*** 5.81	F(11,36)* 1.99	F(11,184)* 2.35
Q-Statistic (Chow Test)	3.71 p<0.01				

NOTE: Entries are regression coefficients. Values in parentheses are the corresponding t-statistics.

\*\*\* p < .01

\*\* p < .05

\* p < .10

Table 5-8  
Dependent Variable: Price Search

<u>Variable</u>	<u>Total Sample</u>	<u>Product</u>		
		M	T	V
Intercept	9.23 (6.95)***	11.81*** (3.35)	12.39*** (5.44)	6.73 (3.55)
Perceived Price Range	0.01 (2.02)**	-0.00 (-0.17)	0.01 (1.55)	0.01 (0.99)
Subjective Cost of Search	-0.61 (-3.66)***	-0.49 (-1.37)	-1.03 (-3.46)	-0.33 (-1.32)
Confidence In Price Images	0.08 (0.52)	-0.56 (-1.47)	0.21 (0.76)	0.27 (1.27)
Price-Quality Inference	-0.19 (-1.06)	0.21 (0.49)	-0.15 (-0.48)	-0.21 (-0.84)
Price Importance	0.04 (0.26)	-0.03 (-0.07)	-0.14 (-0.48)	0.24 (1.19)
Price Negotiation	0.24 (1.27)	0.29 (0.60)	0.18 (0.56)	0.21 (0.74)
Purchase Experience	-0.52 (-4.46)***	-0.77 (-0.88)	-1.02* (-1.75)	-0.55** (-3.75)

Table 5-8 (Continued)

<u>Variable</u>	<u>Total Sample</u>	<u>Product</u>		
		M	T	V
Store Loyalty	2.21 (1.46)	8.06** (2.49)	-2.95 (-0.82)	1.96 (0.97)
Brand Loyalty	-0.22 (-0.17)	-0.43 (-0.17)	7.89** (2.38)	-1.10 (-0.61)
Expertise	-0.37 (-2.17)**	-0.72 (-1.67)	-0.98*** (-3.26)	0.13 (0.54)
Buy On-Sale	0.13 (0.19)	-1.48 (-0.82)	-0.12 (-0.09)	0.08 (0.08)
R <sup>2</sup> (Adjusted)	0.10	0.11	0.14	0.08
F-Statistic	F(11,339) 4.65***	F(11,50) 1.67	F(11,111) 2.74***	F(11,154) 2.26**
Q-Statistic (Chow Test)	3.34 p<.01			

NOTE: Entries are regression coefficients. Values in parentheses are the corresponding t-statistics.

\*\*\* p < .01  
\*\* p < .05  
\* p < .10

Table 5-9

## Correlation Matrix of Variables in Regression 3

Variable	Mean	Std Dev	$X_1$	$X_2$	$X_3$	$X_4$	$X_5$	$X_6$	$X_7$	$X_8$
Price Search	( $X_1$ )	7.84	6.34							
Perceived Price Range	( $X_2$ )	82.70	64.70	0.16***						
Subjective Cost of Search	( $X_3$ )	28.50	15.70	-0.19***	0.07					
Confidence in Price Images	( $X_4$ )	4.07	2.02	0.02	-0.01	0.00				
Perceived Price Quality Association	( $X_5$ )	3.56	1.74	-0.02	-0.06	0.06	0.18***			
Price Importance	( $X_6$ )	4.74	1.32	0.13**	0.09*	-0.29***	-0.08	-0.15***		
Price Negotiation	( $X_7$ )	0.11	0.24	0.19***	0.11**	-0.08	-0.01	-0.08	0.08	
Purchase Experience	( $X_8$ )	1.91	2.58	-0.26***	-0.01	0.11**	0.08	-0.08	-0.02	-0.07
Product Expertise	( $X_9$ )	4.53	1.80	0.12***	0.09	0.03	-0.06	0.04	0.06	0.07

\*  $P < .10$   
 \*\*  $P < .05$   
 \*\*\*  $P < .01$

Note: n=350

results revealed several differences which should be mentioned before turning to the aggregate sample results.

The sub-sample of consumers who purchased a manufacturer's brand which was available at only one store (Group IA2) differed in several respects from the remaining three sub-samples presented in Table 5-7. For this group of consumers only, confidence in their price images of the retail stores was positively related to the extent of their price search. Another surprising finding for this sub-sample was that brand loyalty was positively related to price search.

Two additional unexpected relationships appear to account for the significant Chow Test reported in Table 5-8. For the buyers of microwaves, store loyalty was positively related to price search. Also inconsistent with the proposed model was the finding that brand loyalty was positively related to price search for the buyers of televisions. While the statistical significance of these two Chow Tests suggests that these differences are meaningful, no substantive explanation was readily apparent.

#### Perceived price range

H10 predicted that consumers' estimates of the price range of their preferred models would have a positive effect on their price search. The results supported this hypothesis ( $t=+2.02$ ;  $p<.05$ ) and are thus consistent with the economics of information theory. The regression coefficient indicates that consumers' price search is approximately one half unit higher for every fifty dollar increment in their perceived price range.

Subjective cost of search

H11 predicted that consumers' subjective cost of search would have a negative effect on their search for price information. The results supported this hypothesis strongly ( $t=-3.66$ ;  $p<.01$ ). For every \$15 per hour increase in the consumer's subjective cost of search, price search declined by approximately one unit<sup>5</sup>. Since the mean amount of price search was approximately seven units, this represents a substantial effect.

Confidence in price images

H12 predicted that consumers who were confident about which stores had the best prices would undertake less search for price information. However, there was no relationship between consumers' confidence in their price images and their price search ( $t<1$ ). Thus, we were unable to reject the null hypothesis.

Price-quality inferences

H13 predicted that a strong belief in a price-quality relationship would have a negative effect on consumers' search for price information. While the results were in the predicted direction, the relationship was not statistically significant ( $t=-1.06$ ;  $p>.10$ ).

Price importance

H14 predicted that price importance would have a positive effect on consumers' search for price information. The rationale was that some

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<sup>5</sup> Due to the fact that the measure of subjective cost of search has been standardized, the magnitude of the effect reported in the text can not be inferred directly from the regression coefficient in Table 5-7.

consumers would place greater psychological importance on obtaining a good price irrespective of their subjective cost of search or perceived price variation. Of interest then, was whether the price importance construct would have an independent effect on consumers' search after controlling for consumers' perceived price variation and subjective cost of search.

While the simple correlation between price importance and price search was significant ( $r=.12$ ;  $p<.02$ ), the regression coefficient was not ( $t<1$ ). Thus, we were unable to reject the null hypothesis. Note, in addition, that price importance was significantly correlated with both consumers' subjective cost of search and perceived price range. This suggests that the price importance construct, which has been discussed in the marketing literature, is redundant with the standard microeconomic concepts noted above.

#### Shopping strategies: Price negotiation and buy on sale

H15a predicted that price negotiation would have a negative effect on consumers' search for price information by substituting for other types of price comparison shopping. However, the results suggested that there was not a significant relationship between these two variables ( $t=1.27$ ;  $p>.20$ ).

H15b predicted a negative relationship between "buying on sale" and consumers' search for price information. There was no relationship between these variables ( $t<1$ ). Thus, we were unable to reject the null hypothesis.

Purchase experience

H16 predicted that purchase experience would have a negative effect on consumers' search for price information. The results supported this hypothesis strongly ( $t=-4.46$ ;  $p<.01$ ). Specifically, each additional purchase which the consumer had made in the same product category tended to reduce price search by one-half unit.

Loyalty

H17a. and H17b. predicted that brand and store loyalty respectively would have negative effects on consumers' price search. The results failed to show that either of these variables had a significant impact on consumers' search. In fact, very few consumers repeated the purchase of a brand or repatronized the store at which the previous appliance was purchased. Thus, the lack of variation in this independent variable may account for the inability to detect a correlation with price search.

Product expertise

H18 predicted that consumers who felt that they had greater knowledge about the target product category would undertake more search. The results were significant in the expected direction ( $t=2.17$ ;  $p<.05$ ). Consumers who indicated that they had a difficult time evaluating the quality of the various brands of appliance were less inclined to acquire price information.

In addition to the positive linear relationship between expertise and price search, some previous research suggested that a negative curvilinear effect would be obtained. Therefore, an exploratory

analysis was conducted to test for this effect but a models comparison test failed to reject the null hypothesis.

The components of price search:  
An exploratory analysis

Before turning to consumers purchase outcomes, one further aspect of consumers' price search is explored. The relationships between the foregoing independent variables and each of the (six) components underlying consumers' total price search were explored. The results of these regression analyses are displayed in Table 5-10. The paucity of significant relationships between the predictors and the components of price search is the most evident result. Purchase experience and the consumers' subjective cost of search were the only consistent predictors of the respective components of price search.

Consumers' Purchase Outcomes

Several previous studies have reported that considerable price variation is present in local markets. This suggested that consumers' purchase outcomes (i.e. price paid for a specific model) might also vary dramatically. Accordingly, this study examined several factors that were expected to affect consumers' purchase outcomes.

Consumers' purchase outcomes were expected to be affected by their search for price information; education; deliberation before purchasing; expertise in the product category; efforts to negotiate price; purchasing a sale-priced model; and use of external memory<sup>6</sup>. Seventy-

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<sup>6</sup> Only 29 consumers who completed the store-exit interview bought an appliance model for which a "purchase outcome" could be computed. Since the (simple) correlation between Use of External Memory and Purchase Outcome was not significant, this predictor variable was

Table 5-10  
Components of Price Search

<u>Variable</u>	<u>Type 1*</u>	<u>Type 2</u>	<u>Type 3</u>	<u>Type 4</u>	<u>Type 5</u>	<u>Type 6</u>
Intercept	1.11 (3.77)***	0.12 (3.08)***	0.69 (2.06)**	0.74 (2.40)**	1.46 (1.88)*	1.88 (4.35)***
Perceived Price Range	-0.00 (-0.00)	0.00 (1.68)*	0.00 (0.98)	0.00 (1.46)	0.00 (0.68)	0.00 (2.47)**
Subjective Cost of Search	-0.02 (-0.39)	0.00 (0.48)	-0.15 (-2.07)**	-0.14 (-2.09)**	-0.26 (-1.61)	-0.45 (-4.86)***
Confidence in Price Images	-0.09 (-2.61)**	-0.01 (-1.52)	0.03 (0.78)	0.02 (0.47)	0.16 (1.78)*	-0.05 (-0.93)
Price-Quality Inference	-0.05 (-1.31)	-0.00 (-0.52)	-0.06 (-1.26)	0.08 (1.90)*	-0.12 (-1.78)*	0.04 (0.72)
Price Importance	-0.05 (-1.53)	0.01 (1.92)*	-0.01 (-0.19)	0.01 (0.42)	-0.03 (-0.30)	0.08 (1.56)
Price Negotiation	0.11 (2.41)**	-0.00 (-0.25)	0.00 (0.03)	-0.07* (-1.42)	-0.02 (-0.19)	0.30 (4.47)***
Purchase Experience	-0.05 (-1.74)*	-0.00 (-1.33)	-0.11 (-3.57)***	-0.13 (-4.68)***	-0.16 (-2.18)**	-0.05 (-1.35)
Store Loyalty	0.67 (1.87)*	-0.01 (-0.31)	1.00 (2.46)**	-0.50 (-1.33)	0.63 (0.67)	0.38 (0.72)
Brand Loyalty	-0.04 (-0.14)	-0.00 (-0.12)	-0.66 (-1.86)*	-0.03 (-0.11)	0.27 (0.33)	0.28 (0.61)
Expertise	0.03 (0.71)	-0.00 (-0.96)	0.06 (1.26)	-0.00 (-0.05)	0.24 (2.26)**	0.03 (0.61)
Buy On-Sale	-0.11 (-0.65)	-0.05 (-2.34)**	0.22 (1.18)	-0.05 (-0.31)	0.39 (0.89)	-0.35 (-1.44)
R <sup>2</sup> (Adjusted)	0.04	0.02	0.05	0.08	0.02	0.15
F-Statistic	F(11,339) 2.35***	F(11,339) 1.53	F(11,339) 2.55***	F(11,339) 3.81***	F(11,339) 1.68*	F(11,339) 6.83***

Note a: Type 1=Calls to Stores, Type 2=Mail Order Vendors, Type 3=Store Catalogues, Type 4=Friends and Relatives, Type 5=Newspaper Ads, and Type 6=Store Visits.

Note b: Entries are regression coefficients. Values in parentheses are the corresponding t-statistics.

\*\*\* p<.01  
\*\* p<.05  
\* p<.10

five consumers completed the necessary measures. The regression accounted for 6% of the variation in the dependent variable but was not statistically significant. Nonetheless, the significance of each predictor variable was used to evaluate the corresponding hypothesis. The results are in Table 5-11. Figure 5-5 displays this section of the proposed model.

Tables 5-11 and 5-12 show the results when the aggregate sample is partitioned by sampling methods and products respectively. In each case the Chow Test indicated that the sub-groups did not differ significantly. Table 5-13 provides the correlation matrix of the variables included in this analysis.

#### Price search

H19 predicted that search for price information would have a negative effect on consumers' purchase outcomes (i.e. pay a lower price for the specific model). However, the regression found no relationship between these two variables ( $t<1$ ); nor was the simple correlation between price search and purchase outcome significant ( $p>.20$ ).

#### Use of external memory

H20 predicted that use of external memory would have a negative effect on consumers' purchase outcomes. We were unable to reject the null hypothesis based on the simple correlation between these variables ( $p>.20$ ).

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dropped from the regression analysis in order to test the remaining hypotheses with a larger sample size.

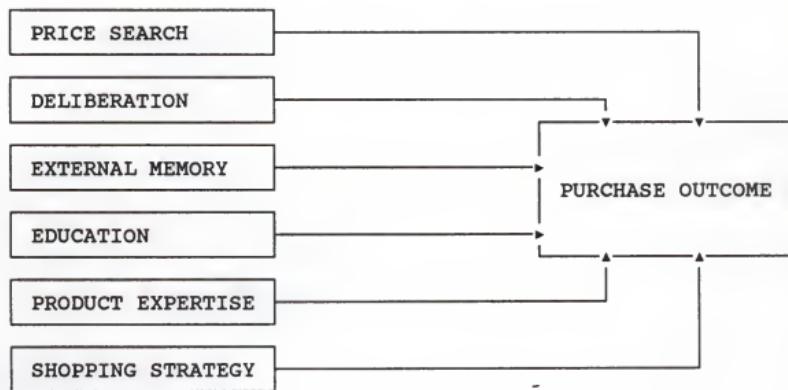


Figure 5-5  
Explaining Consumers' Purchase Outcomes

**Table 5-11**  
**Dependent Variable: Purchase Outcome**

<u>Variable</u>	<u>Total Sample</u>	<u>Sub-Sample</u>	
		IA1	IIA1
Intercept	1.19 (1.37)	3.15 (1.33)	1.24 (1.06)
Price Search	0.07 (1.45)	-0.07 (-1.36)	0.10 (1.43)
Buy On-Sale	-1.51 (-2.85)***	-4.42 (2.32)**	-1.35 (-2.00)*
Price Negotiation	-0.05 (-0.30)	0.10 (0.39)	-0.12 (-0.56)
Education	-0.19 (-0.40)	0.37 (0.65)	-0.13 (-0.20)
Deliberation	-0.21 (-1.49)	0.19 (0.94)	-0.33 (-1.75)*
Expertise	0.07 (0.57)	0.08 (0.56)	0.10 (0.58)
R <sup>2</sup> (Adjusted)	0.06	0.10	0.03
F-Statistic	F(6,68) 1.79	F(6,22) 1.53	F(6,39) -1.20
Q-Statistic (Chow Test)	0.74 p>.01		

Note a: Entries are regression coefficients. Values in parentheses are the corresponding t-statistics.

\* p < .10  
 \*\* p < .05  
 \*\*\* p < .01

Note b: Collinearity diagnostics were run on each of the predictor variables in the total sample regression. In no case did the Variance Inflation Factor (SAS Statistics, 1985) approach the level where multicollinearity is considered to be a problem.

Table 5-12  
Dependent Variable: Purchase Outcome

<u>Variable</u>	<u>Total Sample</u>	<u>M OR V<sup>a</sup></u>	<u>Product</u>	<u>T</u>
Intercept	1.19 (1.37)	2.98 (2.16)	-0.25	(-0.23)
Price Search	0.07 (1.45)	0.12 (1.86)	0.01	(0.10)
Buy On-Sale	-1.51 (-2.85)***	-1.85 (-2.44)***	-1.63	(-1.56)*
Price Negotiation	-0.05 (-0.30)	-0.04 (-0.21)	-0.13	(-0.47)
Education	-0.19 (-0.40)	-0.11 (-0.18)	-0.36	(-0.48)
Deliberation	-0.21 (-1.49)	-0.54 (-2.65)***	-0.13	(0.72)
Expertise	0.07 (0.57)	-0.10 (-0.48)	0.24	(1.21)
R <sup>2</sup> (Adjusted)	0.06	0.20	-0.03	
F-Statistic	F(6,68) 1.79	F(6,35) 2.68**	F(6,26) 0.83	
Q-Statistic	1.55 p>.01			

Note a: Microwaves and VCR's were pooled in the separate product analyses because the sample of microwave buyers alone was not sufficient to estimate the parameters for that sub-group.

Note b: Entries are regression coefficients. Values in parentheses are the corresponding t-statistics.

\* p < .10  
\*\* p < .05  
\*\*\* p < .01

Table 5-13

## Correlation Matrix of Variables in Regression 4

Variable	Mean	Std Dev	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	X <sub>6</sub>	X <sub>7</sub>
Purchase Outcome (X <sub>1</sub> )	22.2	19.6							
Price Search (X <sub>2</sub> )	7.84	6.34	0.08						
Buy on Sale (X <sub>3</sub> )	0.76	0.43	-0.34***	-0.02					
Price Negotiation (X <sub>4</sub> )	0.11	0.24	-0.05	0.29**	-0.02				
Education (X <sub>5</sub> )	0.47	0.50	-0.03	0.17	0.01	-0.14			
Deliberation Period (X <sub>6</sub> )	0.42	0.45	-0.08	0.37***	-0.10	-0.17	0.22*		
Expertise (X <sub>7</sub> )	4.53	1.80	0.05	-0.08	0.01	-0.01	0.07	0.09	
Use of External Memory (X <sub>8</sub> )	0.30	0.46	0.07	0.07	-0.31*	0.26	-0.17	0.24	0.01

\* P < .10  
\*\* P < .05  
\*\*\* P < .01

Note: n=75 except for correlations with Use of External Memory where n=29.

Education

H21 predicted that formal education would be negatively related to consumers' purchase outcomes. However, there was no relationship between these two variables ( $t<1$ ).

Deliberation

H22 predicted that consumers who waited a longer period between first considering the purchase and actually acquiring the appliance would achieve better purchase outcomes. While both the regression and correlational results were in the expected direction, neither relationship was statistically significant ( $p>.10$ ).

Expertise

H23 predicted that consumers who had greater (subjective) expertise in the product category would achieve better purchase outcomes. We were unable to reject the null hypothesis ( $t<1$ ).

Price negotiation

H24a predicted a negative relationship between price negotiation and purchase outcome. We were unable to reject the null hypothesis ( $t<1$ ).

Buy on-sale

H24b predicted that consumers who bought their appliances at a sale price would achieve better purchase outcomes. There was support for this hypothesis ( $t=-2.85$ ;  $p<.01$ ). A consumer who made the purchase on sale acquired the appliance for an average of \$33.50 less than a consumer who bought the same model at the "regular price."

Speculative Hypotheses Pertaining to the Mean  
Level of Price Search Undertaken by Consumers

Do Consumers Underestimate the Price Variation  
of their Preferred Models?

Considerable research into behavioral decision theory as well as one previous field survey suggested that consumers might tend to underestimate the price dispersion of their preferred appliance models. Such a finding would help explain the low mean level of search observed in previous studies of consumers' shopping for durables. To examine this hypothesis, consumers were asked to estimate the price range of their preferred models. The actual price range was also recorded. The actual price range was expected to exceed the perceived price range by a substantial margin. The results are in Table 5-14.

Eighty-nine consumers estimated the price range of models for which actual price range data were also available. Contrary to our expectation, the majority of consumers (56%) overestimated the price range. Moreover, a (paired) t-test showed that the mean perceived range was significantly greater (by \$15) than the mean actual range ( $p < .03$ ). The fact that the current sample of consumers tended to overestimate the price variation may help explain the high mean level of retail shopping reported in this study relative to past research. The current respondents visited an average of approximately 3.8 stores while previous studies generally report less than three retail store visits.

Table 5-14  
Perceived versus Actual Price Range

<u>Variable</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>
<u>Objective</u>	89	67.02	35.61
<u>Perceived</u>	89	82.73	64.69

T-Test of the Difference between Consumers' Estimates and  
the Objective Price Ranges of the Appliance Models Purchased

<u>Variable</u>	<u>Mean</u>	<u>Std Error  of Mean</u>	<u>T</u>	<u>PR&gt; T </u>
<u>Difference</u>	15.71	6.82	2.30	0.02

Objective Versus Subjective Cost of Search

While the labor market provides a consumer with one objective measure of the value of his time, it is conceivable that the consumer may value his time differently. Price comparison shopping may be more effortful and/or less enjoyable than other activity (Becker, 1965). As a result, one might predict that consumers would value their own time more highly than anyone else does (i.e. egocentric bias). On average then, consumers' subjective cost of search would exceed their wage rates and this would help explain the low mean level of search observed in previous studies. Note that the relevant opportunity cost of price comparison shopping is actually the after-tax wage rate since savings from search will be in after-tax dollars.

Two hundred forty-two consumers responded to questions about their wage rate as well as the subjective cost of search. (See Table 5-15.) Results indicated that the mean wage rate of the respondents was \$11.76 per hour. Assuming an average tax rate of 20%, this implies that these consumers should report a mean subjective cost of search of approximately \$9.41 per hour (i.e.  $\$11.76 * (1 - .20)$ ).

Instead, the mean subjective cost of search reported by these consumers was \$32.95 per hour. This subjective cost of search is normatively appropriate for a consumer with a wage rate of \$41.19 per hour. The difference between these consumers' actual wage rates and the wage rates implied by their subjective cost of search was statistically significant ( $t=21.15$ ;  $p<.01$ ).

Thus, we reject the null hypothesis and conclude that consumers' subjective cost of price comparison shopping significantly exceeds the

Table 5-15  
Consumers' Actual Wage Rates versus the Wage Rates Implied by  
their Subjective Cost of Search

<u>Variable</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>
<u>Actual Wage</u>	242	11.76	9.54
<u>Implied Wage</u>	242	41.19	17.28

Actual Wage represents the consumers' hourly wage rates.

Implied Wage is derived from consumers' subjective cost of search.  
 $\text{Implied Wage} = \text{Subjective Cost of Search} / (1 - \text{Tax Rate})$ .  
A tax rate of twenty percent has been assumed for all consumers.

T-Test of the Difference between the Consumers' Actual Wage Rate and the Wage Rate Implied by their Subjective Cost of Search

<u>Variable</u>	<u>Mean</u>	<u>Std Error of Mean</u>	<u>T</u>	<u>PR&gt; T </u>
<u>Difference</u>	29.43	1.39	21.15	0.001

cost implied by their wage rates. This may help explain the low absolute level of search observed in previous studies.

#### Describing Consumers' Search for Price Information

The following section presents additional evidence that broadens the descriptive picture of consumers' shopping. Consumers' search for price information is highlighted and placed in the context of previous research.

In view of previous results suggesting that many consumers undertake less in-store search than expected, this study sought to determine whether these consumers were merely using alternative sources of information about retail prices. Accordingly, the following discussion presents data concerning the extent to which consumers used several possible sources of price information. (See Table 5-16.) Then, the price search by consumers who visited just one or two stores is compared to their more store-intense counterparts. (See Table 5-17.)

In view of the rapid growth of mail-order retailers, especially for home electronics products, we examined consumers' use of this source. In this study, fewer than one in twenty consumers contacted a mail-order company. (Note, however, that this study's research method is strongly biased against including those consumers who made the purchase from a mail-order vendor.) More common was use of the telephone to acquire price information from local retailers. Twenty percent of the respondents called local stores to inquire about prices.

Many consumers reported using other sources to obtain price information. For example, about half of all respondents indicated that price information had been obtained from friends or relatives. Moreover,

Table 5-16  
Search for Price Information  
Sources Utilized

<u>Sources of Price Information</u>	<u>Percentage of Respondents Consulting each Source</u>
Retail Stores - visited	100%
Retail Stores - by phone	20%
Mail Order Vendors	04%
Store Catalogues	41%
Friends or Relatives	42%
Newspaper Ads	67%
 <u>Mean Number of Sources Consulted:</u> 2.80	

Table 5-17  
Search for Price Information  
Sources Utilized by Moderate versus Store Intense Shoppers

<u>Sources of Price Information</u>	<u>Percentage of Respondents Consulting each Source</u>	
	<u>Moderate Shoppers</u>	<u>Store Intense Shoppers</u>
Retail Stores - visited	100%	100%
Retail Stores - by phone	20%	21%
Mail Order Vendors*	1%	4%
Store Catalogues*	16%	51%
Friends or Relatives	38%	44%
Newspaper Ads	67%	75%
 <u>Mean Number of Sources Consulted*</u>		
2.42		2.95

Note a: Moderate Shoppers are defined as those respondents who visited either one or two stores (n=104). Store Intense Shoppers visited three or more stores (n=265).

Note b: \* indicates that the difference between groups is statistically significant ( $p < .05$ ).

30% of the consumers consulted catalogs from which specific retail price information would more likely be obtained. Finally, about two thirds of the respondents read retail price ads in newspapers.

Thus, many consumers appear to supplement their in-store search with other approaches to comparing prices. However, the following data suggests that these sources usually serve as complements to, rather than substitutes for, in-store search. (See Table 5-17.) That is, consumers who visit just one or two stores obtain price information from significantly fewer additional sources than consumers whose shopping is more store intense ( $t=-4.3$ ;  $p<.01$ ). In addition, the less store intense shoppers make significantly fewer price comparisons of the specific appliance model that they ultimately purchase ( $t=-5.3$ ;  $p<.01$ ). In the context of previous research, these findings suggest that the "store-intense cluster" of shoppers (Westbrook and Fornell, 1979) undertook more extensive retail search as part of a concerted effort to acquire price information.

In the next chapter the noteworthy results are discussed more extensively in the context of the proposed model and the applicable economic theory.

## CHAPTER VI CONCLUSION

An integrative conceptual framework for explaining consumers' search behavior and purchase outcomes has been proposed and tested. In the first section of this chapter, further interpretation of the results is provided in the context of the proposed model and the applicable economic theory. This section is organized in parallel fashion to the preceding chapters--the antecedents of consumers' price perceptions and subjective cost of search are discussed first; consumers' search for price information and purchase outcomes are then considered. In the second section, the limitations of the study are discussed and suggestions for future research are offered.

### Summary and Implications

#### Correlates of the Perceived Price Range

The objective price range of a consumer's preferred appliance model did not exert a significant effect on the consumer's perceived price range. Since the majority of consumers bought an appliance model after making just one price comparison of that specific item (e.g. Sharp 19LP56 TV), most consumers were unable to use "sample" information about its price range to estimate its price range in the marketplace.

Note, however, that most consumers did acquire price information about competing brands and were able to make their purchases at

relatively good prices. This suggests that consumers were comfortable making inter-brand comparisons of value and did not feel the need to confine their price comparison shopping to a predetermined brand/model. Instead, prices were gathered in the normal course of acquiring information about the product's attributes.

Interestingly, factors other than the objective price range of a specific appliance were shown to have significant effects upon consumers' estimates. Specifically, consumers appeared to be using the absolute price of the appliance to estimate its price range. That is, the greater the price of the appliance, the greater the price variation expected by consumers. In addition, consumers' estimates of the number of stores which carried a particular item were also directly related to their perceptions of the price range. Since some research supports the ecological validity of these relationships (e.g. Pratt et al., 1979; current study), it appears that consumers have developed some reasonable heuristics for estimating the range of retail prices. These heuristics enable consumers to behave in ways which approximate the predictions of economic theory while circumventing the need for knowledge, or even understanding, of the distribution of retail prices.

#### Do Consumers Underestimate the Dispersion of Retail Prices?

One previous study found that consumers (who were not in the market for the target products) underestimated the range of market prices for a variety of consumer products (Maynes and Assum, 1982). The current paper proposed a theoretical basis for that phenomenon and sought to replicate the result. In this study, however, the majority of consumers actually overestimated the price range for their preferred models.

Two possible interpretations of these data are as follows. The most straightforward reconciliation of the conflicting findings pertains to a situational difference between the two studies. In the former study, the random sample of consumers who were surveyed were not in the market for the target products. In contrast, consumers in the current study were actively shopping for the target products. Consequently, these consumers were more likely to be aware of the large price differences that existed between stores.

Alternatively, specific characteristics of the markets which were studied may account for the discrepant results. For example, if the extent of retail price advertising was greater in the current study, then consumers might be more aware of price differences between stores. Since a major electronics retailer entered the market and advertised heavily shortly before the current study was undertaken, this explanation is also plausible. Since the current study was conducted in a single local market, it is mute on the issue of environmental effects on consumers' price perceptions.

#### Correlates of Consumers' Subjective Cost of Search

As predicted by economic theory, consumers' subjective cost of search was affected significantly by their wage rates. However, the magnitude of this relationship ( $r=.22$ ) suggested that factors beyond consumers' wage rates were also influencing their subjective cost of search. One factor that probably attenuated the observed relation was the measurement error associated with the criterion. The test-retest correlation of this variable was only 0.59 suggesting that consumers had

some difficulty providing quantitative estimates of their cost of search.

Beyond this methodological shortcoming, a supplementary finding provides a more interesting explanation for the low correlation between the consumers' wage rates and their subjective cost of search. In accordance with the proposed model, consumers' enjoyment of shopping had a significant effect upon their subjective cost of search. This indicates that consumers' valuation of their time goes beyond a simple dichotomy of labor and leisure and extends previous research in marketing by recognizing that the time spent on an activity can be perceived in terms of dimensions other than effort (Becker, 1985). As a result, consumers' subjective cost of search can depart dramatically from the normative value which is typically assumed in analytic studies of search behavior.

Wage Rate as a Proxy for the Subjective Cost of Search:  
A (Downwardly) Biased Estimate?

Economics of Information Theory maintains that the wage rate is the primary determinant of a consumer's opportunity cost of search. In the current study, however, consumers assessed their subjective cost of shopping at rates which significantly exceeded their hourly wages. One possible explanation is that consumers look at price comparison shopping in the same way that they view the opportunity for additional labor hours (i.e. "overtime"). The subjective cost of search might then be set at the marginal, rather than the average, wage rate. Thus, they expect to be compensated for these search hours at an overtime rate of pay.

A second factor which may help account for the discrepancy between consumers' wage rates and their subjective cost of search pertains to income taxes. Consumers may be failing to recognize that the savings which are achieved by price comparison shopping are in after-tax dollars. Unlike the wages of employment, which are typically taxed, the savings from price comparison shopping are fully retained by the consumer. If consumers do not incorporate this distinction in their assessment of the opportunity cost of search, then this could partially account for the verbal reports which were obtained in this study. A third possibility is that consumers simply require greater monetary rewards from shopping for appliances than they do from their occupation. The current study is unable to discriminate between these potential explanations.

Wage Rate Versus Subjective Cost of Search as a Predictor of Consumers' Search for Price Information

Several previous studies were disappointed to find that consumers' wage rates (or incomes) were not significantly related to the extent of their search. This led at least two authors to suggest that consumers' subjective cost of search be measured directly to establish its relation to consumers' search. The current study measured both consumers' wage rates and their subjective cost of search in order to facilitate a comparison of their predictive utility. Two approaches to doing so follow.

First, one can compare the simple (zero order) correlation of each variable with consumers' search. Consumers' subjective cost of search correlates significantly with their search for price information ( $r=.18$ ;

$p < .01$ ). In contrast, consumers' wage rates were not significantly correlated with their price search ( $r = .10$ ;  $p > .10$ ).

The second approach is to compare two alternative sets of regression results. In one case, consumers' subjective cost of search is used along with the remaining independent variables in the proposed framework to predict consumers' search for price information (see Table 6-1). In the second case, consumers' wage rates are used instead of their subjective cost of search. As indicated in the table, the regression using consumers' wage rates has lower explanatory power (adjusted  $r^2 = .08$  vs.  $.05$  respectively). In addition, the regression coefficient associated with consumers' subjective cost of search is statistically significant ( $p < .02$ ) while wage rate is not a significant predictor of consumers' search for price information.

One implication of this set of findings is that marketers should be aware of consumers' subjective cost of search for their particular product/service.<sup>1</sup> Mere knowledge of the income level or wage of the target consumer(s) would not necessarily provide a good basis for predicting the extent of price comparison shopping which consumers are likely to undertake. While pricing decisions are the most likely to be affected, each of the marketing mix variables could potentially be adjusted to better reflect consumers' expected search behavior. For example, in product categories where consumers' subjective cost of search is found to be unexpectedly high, more extensive distribution or

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<sup>1</sup> The three products examined in the current study are marketed in a similar fashion (i.e. same stores, salespeople and ads). Therefore, inter-product differences in consumers' subjective cost of search were not expected or observed.

Table 6-1  
Subjective Cost of Search versus Wage Rate as a Predictor  
of Consumers' Search for Price Information

<u>Variable</u>	<u>Regression A</u>	<u>Regression B</u>
Intercept	7.10 (4.84)	7.82 (4.99)
Subjective Cost of Search (A)	-0.85 (-2.40)*	.001 (0.02)
Wage Rate (B)		
Perceived Price Range	0.01 (2.28)	0.01 (1.96)
Confidence in Price Images	-0.10 (-0.51)	-0.11 (-0.59)
Perceived Price/ Quality Association	-0.26 (-1.38)	-0.29 (-1.24)
Price Importance	0.13 (0.69)	0.30 (1.50)
Price Negotiation	0.07 (0.29)	0.13 (0.54)
Purchase Experience	-0.48 (-2.97)	-0.50 (-2.93)
Store Loyalty	2.46 (1.26)	3.31 (1.70)
Brand Loyalty	-0.53 (-0.29)	-1.20 (-0.66)
Buy-on-Sale	-0.53 (-0.29)	0.26 (1.18)
F-Statistic	F(10, 225) 2.97	F(10, 225) 2.34
R-Squared (adjusted)	0.08	0.05

Note a: Values in parentheses are the t-statistics corresponding to the parameter estimates.

Note b: \* indicates that Subjective Cost of Search is a statistically significant predictor ( $p < .05$ ). Wage Rate is not statistically significant ( $p > .20$ ).

selling by direct mail may prove to be advantageous. While some initial market research expense will be incurred to ascertain consumers' subjective cost of search in a particular product category, the cost of incorporating this information into ongoing marketing plans should not be prohibitive since consumers' cost of search is probably reasonably stable in the short run.

#### Other Correlates of Consumers' Search for Price Information

Purchase experience in the product category emerged as the strongest negative influence on consumers' price search. Interestingly, this effect was not contingent upon the recency of the experience. Therefore, it was not the ability to recall specific item prices which reduced the amount of price search undertaken by experienced consumers. Instead, the results indicate that experienced consumers restricted the set of stores and brands which they considered.

Another noteworthy result was that consumers who reported that they lacked the ability to assess product quality (i.e. low product expertise) tended to undertake less total price search. Presumably, consumers who lacked the knowledge to assess product quality had difficulty making price-quality tradeoffs. As predicted, this inability curtailed their price comparison shopping. Interestingly, low product expertise was also associated with greater use of price advertisements. Together with the aforementioned result, this suggests that consumers who lack product knowledge forego the opportunity to visit stores wherein both price and quality information can be obtained. Instead, they seek out price information (only) in a more cost effective manner such as retail price ads. Collectively, these findings help to clarify

previous research which reports that consumers who have less product knowledge undertake less information search of all types.

#### Correlates of Consumers' Purchase Outcomes

In some respects, the results of this segment of the study were disappointing. Previous research suggested that consumers' purchase outcomes might vary dramatically. The extent of price variation observed in this marketplace also suggested that the analysis of consumers' purchase outcomes would be revealing. Consequently, one hoped to explain this variation in terms of consumers' shopping strategies and cognitive heuristics. Thus, the finding that nearly all of the consumers achieved good purchase outcomes was not exciting.

In short, it appears that most consumers have learned that appliances are frequently available at "sale" prices. This enables consumers to sample primarily from the lower end of the market price distribution. Furthermore, the variation between these sale prices was not sufficient to warrant extensive price comparison shopping. Consequently, neither a great deal of price search nor use of "external memory" (to remember numerous prices) was necessary to achieve a reasonably good purchase outcome. Negotiation skills, which are typically possessed by consumers of higher socioeconomic status, were likewise unimportant in this context. These results should comfort public policymakers, consumer educators and others who were concerned that retailers' pricing and advertising practices were adversely affecting the "disadvantaged" segment of the consuming public.

Limitations and Suggestions For Future Research

In this section of the chapter the limitations of the study are discussed in the context of the project's principal research objectives. The limitations stemming from inadequate (sub)sample sizes are discussed first. Conceptual limitations and related measurement problems are then considered. In the course of discussing these limitations, suggestions for future research are offered.

Inadequate (Sub)-Sample Size

One major limitation of the study arose from the sample size on which some of the analyses were based. First, the number of consumers who purchased appliance models which were available at more than one store was less than originally expected. As a result, the analyses of consumers' price perceptions and consumers' purchase outcomes were each based on a sample of less than one hundred respondents. The principle factor underlying this phenomenon was that appliance models which were (virtually) identical were frequently assigned different model numbers by the manufacturers that sell to multiple retailers (to prevent price comparisons by consumers). In addition, the author had anticipated that the appliance models which were available at multiple stores would be disproportionately popular and this did not prove to be the case.

Another shortcoming of this study arose from the fact that the number of consumers who completed both the store-exit interview and post-purchase questionnaire was not as high as was planned. As a result, examination of the relationships between consumers' pre-purchase perceptions and behaviors on the one hand (e.g. use of external memory)

and their price search and purchase outcomes on the other, was virtually precluded by the small size of this sub-sample.

#### Conceptual Limitations and Related Measurement Issues

Apart from obtaining a greater number of respondents to address the aforementioned issues, several other limitations of this research merit mention. The current study sought to describe and explain consumers' estimates of the price range of their preferred appliance models. While the author defined the price range at the item level (i.e. holding brand and model constant), it appears that consumers adopted a broader and more functional conceptualization of this construct. An alternative approach to measuring consumers' estimates of the price range would entail eliciting consumers' evoked set of brands. One could then examine consumers' perceptions of the price range of this set of similar brands. Since most consumers seemed inclined to conduct their price search across brands, it is conceivable that the objective price range would have been exerted a significant effect on consumers' estimates of that price range.

Consumers' purchase outcomes were also measured at the item level (i.e. holding brand and model constant) in the current study. Relative price paid was then employed as a unidimensional measure of each consumer's purchase outcome. While this approach is unambiguous, it fails to recognize that some brands provide more features and/or quality for the money than others. This may help explain why product expertise, purchase experience and formal education failed to exert significant effects upon consumers' purchase outcomes. The ability to assess the product's value was simply not essential to achieving a good purchase

outcome as defined in the current study. Consequently, future research might attempt to group similar brands based upon objective ratings of quality (e.g. Consumer Reports). Alternatively, one could estimate a hedonic price function<sup>2</sup> (Ratchford, 1980) and utilize consumers' departures from that function as a measure of their purchase outcomes. In this way, the purchase outcomes of consumers who bought competing brands could be compared directly. In view of the large number of appliance models which are currently available in the marketplace, this procedure will probably be needed to obtain an acceptable sample size of comparable purchase outcomes.

The current study was able to provide preliminary empirical evidence concerning consumers' subjective cost of search and its effect on consumers' price search. As predicted, consumers' wage rates and enjoyment of shopping were found to be significantly related to their subjective cost of search. In addition, subjective cost of search was a far better predictor of price search than was the consumer's wage rate. However, most of the variation in consumers' subjective cost of search remained unexplained and consumers' subjective cost of search significantly exceeded their wage rates. Together, these results suggest that one or more important determinants of consumers' subjective cost of search remain to be identified.

One possibility is that the subjective cost of search is affected by the alternative manner in which the consumer actually plans to utilize the time once the search process has been completed. Since the

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<sup>2</sup> Recall that the hedonic price function assigns a dollar value to each of a brand's attributes.

majority of American consumers would not utilize this time to supplement their income, it seems conceivable that the psychic cost of foregoing the leisure activity of their choice will be an important determinant of their subjective cost of search.

In order to better understand the mean level of consumers' subjective cost of search, one might ask consumers to explicitly compare the enjoyment and effort associated with price comparison shopping to these same aspects of their employment. If their work is more enjoyable and/or less effortful, then the results of this study could be fully explained by way of Becker's theory of the value of time.

A related issue which remains to be investigated is whether consumers' subjective cost of search varies at different stages in the search process. This could help explain why the (post-purchase) measure of consumers' subjective cost of search was not more strongly related to consumers' search for price information. Approximately one hundred of the respondents in this study indicated their subjective cost of search at two different stages in their search process. While the two measures were highly correlated ( $r=.59$ ), a systematic change occurred between the two measurements. Consumers indicated that their cost of price comparison shopping was significantly higher on the post-purchase measure than they did on the pre-purchase measure ( $t=3.59$ ;  $p<.01$ ). One possible explanation for this result is that the enjoyment associated with shopping declines during the process. Consequently, the subjective cost of search increases. Alternatively, as the shopping process proceeds, consumers begin to feel the urgency of other chores and activities which heighten the subjective opportunity cost of search.

Future research might attempt to replicate and explain this unexpected finding.

Another limitation of the study merits mention in spite of the fact that it will be a difficult one for future research to overcome. The nature and extent of a consumer's search behavior is a function of numerous situational and personal factors. However, the feasible length of any survey limits the number of constructs which can be measured and/or the number of questionnaire items which can be used to operationalize each of those constructs. In the current study, a compromise approach was implemented. Multi-item measures of some constructs were employed while other constructs were measured with a single item. This enabled us to measure a relatively large number of variables at the risk of failing to detect some relationships as a result of single item (unreliable) measures. The relationships involving constructs which were measured with a single item (e.g. perceived price-quality association; confidence in price images) should be re-examined in future research.

The other inevitable consequence of the compromise approach was that some potentially relevant variables could not be included in this investigation (e.g. perceived risk; involvement). The fact that the proposed model was able to account for only 14% of the variation in consumers' price search suggests that some important variables were, in fact, omitted.

One obvious manifestation of this problem is the finding that price search varied dramatically by product category. Since several variables were explicitly incorporated in the proposed model in order to capture

inter-category differences (e.g. purchase experience, product expertise and perceived price variation), one might not have expected this result. Consequently, one can only speculate that differences in perceived risk (or involvement) across product categories may have been responsible for this observation. Future research might fruitfully be directed toward understanding the specific product category differences that affect the extent of consumers' price search. Panel data would be especially useful for clarifying these product category effects since the remaining explanatory variables could then be controlled on a within-subjects basis.

A final objective of this research was to provide an enhanced description of consumers' pre-purchase search by highlighting their search for price information. By way of the two-stage survey methodology, this study was able to elicit several types of detailed information which had not previously been obtained. However, one important aspect of consumers' shopping which was not captured satisfactorily is described below.

This study did not provide as much insight as was hoped into consumers' price comparison shopping process. While it appears that consumers tended to compare prices across brands and models, it is unclear how consumers' made the decision to terminate search once an acceptable model was located. In response to a multiple choice question, the majority of consumers reported that they stopped shopping because they doubted that the savings from further search would be worth the time and effort. However, this still does not clarify the nature of the cost-benefit tradeoff (if any) which they consciously performed.

Accordingly, future research might attempt to measure consumers' price knowledge directly. Such research might then attempt to understand the manner in which consumers' translate their price knowledge into an expectation about the savings which would likely be derived from price comparison shopping. Because of the difficulty that this type of task would pose for many consumers, these decision processes might best be examined in the laboratory or another setting where the respondent would not be pressed for time. It appears that a combined methodology, using both a field survey and a laboratory task, will be required to yield further insight into this essential aspect of consumers' search behavior.

APPENDIX A  
PRE-PURCHASE QUESTIONNAIRE

DATE: \_\_\_\_\_ INTERVIEWER: \_\_\_\_\_ STORE: \_\_\_\_\_ DAY OF WEEK: \_\_\_\_\_  
SHIFT: \_\_\_\_\_ PRODUCT: \_\_\_\_\_  
ID: \_\_\_\_\_ PHONE: \_\_\_\_\_ NAME: \_\_\_\_\_

1. Are you shopping for the appliance with any friends or family members today?
  - a. no
  - b. yes, spouse
  - c. yes, spouse and children
  - d. yes, other family \_\_\_\_\_
  - e. yes, friends \_\_\_\_\_
2. During the couple of months before you began visiting stores, how many newspaper ads, if any, did you look at for the application?
  - a. 0
  - b. 1
  - c. 2-5
  - d. 6-9
  - e. 10 or more
3. Again, before you began visiting stores, at how many stores, if any, did you browse through the appliance section? \_\_\_\_\_
4. How long ago did you begin visiting stores specifically to look at their appliances?
  - a. today
  - b. less than a week ago
  - c. 1 week ago
  - d. 2 weeks ago
  - e. 3 weeks ago
  - f. 1 month ago
  - g. 2 months ago
  - h. more than 2 months ago
5. Most consumers just remember the brands and prices that they find at each store but, a few consumers write the information down. Do you happen to be keeping any written notes about the prices that you find in each store?

Yes                    No

6. Please tell me how much you agree or disagree with each of the following statements. (The respondent will be handed a card with the following response alternatives.)

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

- a. I feel sure that I know enough about the different features that are available on appliances.
  - b. I feel sure that I know enough about the technical details of how appliances work.
  - c. I feel sure that I know enough about how the different brands perform.
  - d. I feel sure that I know enough about the prices of appliances in Gainesville.
  - e. I feel sure that I know enough about what my family wants in the appliance purchase.
  - f. I feel sure that I know how to make a good appliance purchase.
  - g. I feel sure that I will buy an appliance in the next seven days.
  - h. I can predict exactly which features my appliance will have.
  - i. I can predict exactly what price I'll pay.
  - j. I can predict the exact store at which I'll buy.
8. Which of the following three statements best describes your current brand preference?
- a. I have decided which brand I am going to buy.
  - b. I have narrowed my choice down to two or three specific brands.
  - c. I am still considering many different brands.

[If (a)] Which brand are you planning to buy? \_\_\_\_\_ At what point in your shopping did you decide on this brand? (read the three choices)

- a. before I began visiting stores
- b. after I began visiting stores, but before I came to (current store)
- c. at (current store)

[If (b)] Please tell me the names of the brands that you are considering. \_\_\_\_\_ Of these brands, which one are you most seriously considering or which one do you like best?

[If (c)] Of the appliances you have seen so far, which brand are you most seriously considering or which brand do you like best?  
\_\_\_\_\_

9. What stores are you aware of that sell (favored brand) appliances? \_\_\_\_\_

Please stop and think for a moment and then estimate the number of stores in Gainesville that sell (favored brand) appliances. \_\_\_\_\_

10. What features do you want the particular model to have?

TV Size: \_\_\_\_\_ inches (diagonal); Cable Ready: Yes No;  
Remote Control: Yes No; Stereo Sound: Yes - No

VCR # of Days: \_\_\_\_\_; # of Programs: \_\_\_\_\_;  
Remote Control: Yes No; Stereo Sound: Yes No;  
# of Heads: \_\_\_\_\_

Microwave Size: Compact, Midsize, Full size; Timer: Yes No;  
Multiple Cooking Speeds: Yes No;  
Automatic Rotation: Yes No

11. Please try to estimate the price of the model that you just described, or the most similar model, at the store where you saw it (if the consumer is unsure, ask: what is your best guess?)  
\_\_\_\_\_

12. Please estimate the lowest price at which the same model will be displayed at any store in Gainesville in the next two weeks.  
\$ \_\_\_\_\_

14. How sure or unsure are you about these two estimates?

Not Sure At All      1 2 3 4 5 6 7      Very Sure

15. Let's assume that you just found the specific brand and model you want, and that you could save \$40 on it if you were willing to do more shopping. About how much more time would you be willing to spend comparing prices in order to save an extra \$40 on your purchase price \_\_\_\_\_ hours

16. Can you tell me any of the exact prices that you saw at (first store visited)? Yes No

For the next five questions, please tell me how much you agree or disagree.

17. Even before I began shopping, I was sure about which stores had the best appliance prices in Gainesville.

18. Even when appliances go on sale, their prices usually don't change by very much.
19. Competition tends to keep the prices of well known brands about the same.
20. It is difficult to evaluate the quality of various brands of appliance even after examining them.
21. The price of any specific appliance model is usually about the same at each of the stores which carry it in Gainesville.

Now we'd like to ask a few questions about the shopping visit you just finished at (Store). Your answers are confidential, so please feel free to respond openly.

22. About how much time did you spend shopping in (store name ) today for the appliance? \_\_\_\_\_ minutes
23. Did you speak with a sales person? Yes No
24. Which of the following comes closest to describing your goal for this store visit? (read the four choices)
  - a. I came in ready to buy on this visit.
  - b. I came in to learn more about appliance brands and features.
  - c. I came in to check the store's prices.
  - d. No particular goal. I was just browsing.
25. How did you happen to visit this particular store? (Don't read the choices to the consumer)
  - a. closest to home
  - b. I saw an ad/heard about a sale.
  - c. I knew they had a wide variety of appliance models.
  - d. I knew they had good prices.
  - e. I knew they had a specific brand.
  - f. Other store(s) were nearby.
  - g. Store reputation for quality products.
  - h. I was satisfied with a previous purchase.
  - i. A friend recommended it.
  - j. I was shopping in the store for another item (or often shop here)
  - k. Other (Specify) \_\_\_\_\_
26. Did you happen to see an ad for (this store) before coming here today? Yes No

27. Now, I'd like to know the main reason why you didn't buy your new appliance on this visit. (Don't read the choices)
- a. I might have bought but the store didn't have the model I wanted.
  - b. I wasn't ready to buy yet, it's too soon in my shopping.
  - c. I might have bought, but the price was too high.
  - d. I knew I wouldn't buy at this store, but wanted to shop here anyway.
  - e. The store wouldn't give me credit.
  - f. Other (Specify) \_\_\_\_\_
28. We'd also like to know a little more about your reactions to this shopping visit. (Please tell me how much you agree or disagree.)
- a. The visit was not very informative
  - b. The sales person was not very knowledgeable.
  - c. I felt that I could trust the sales person's advice.
  - d. I felt pressured to buy.
  - e. I wanted more help or attention during my visit.
  - f. I doubt I'll be back to this store for another visit.
29. Finally, we're interested in what you plan to do right now in terms of your shopping. (Read the choices.)
- a. Visit another store that I haven't yet been to. (Which one?)  
\_\_\_\_\_
  - b. Go back to a store that I visited earlier. (Which one?) \_\_\_\_\_
  - c. Stop shopping for a while - no specific plan.

APPENDIX B  
POST-PURCHASE SURVEY

Please do not complete this form until after you have made your purchase.

Section 1: The first few questions ask about who did the shopping, who the new microwave was for, and what factors were important when deciding on which stores to visit.

1. Which one of the following statements best describes your recent purchase? (Please check one only.)

- I did all of the shopping and made the choice.
- I did most of the shopping and made the choice.
- My spouse (or other household member) and I shopped together and made the choice jointly.
- My spouse (or other household member) did most of the shopping and made the choice.

(IF YOUR SPOUSE DID ALL OF THE SHOPPING, PLEASE ASK HIM/HER TO COMPLETE THE QUESTIONNAIRE.)

2. Which of the following statements best describes your recent purchase? (Please check one only.)

- The new MICROWAVE will be used in my own household.
- The new MICROWAVE was bought as a gift.
- Other (Please specify.) \_\_\_\_\_

3. When deciding on which stores to visit, how important or unimportant was each of the following? (Please circle the number which indicates your response.)

	Not	Very	Extremely	Important	Important
a. Convenient location	1	2	3	4	5
b. Good MICROWAVE prices	1	2	3	4	5
c. Wide variety of MICROWAVES	1	2	3	4	5
d. Good repair service	1	2	3	4	5
e. Knowledgeable salespeople	1	2	3	4	5
f. Good credit terms	1	2	3	4	5
g. Pleasant place to shop	1	2	3	4	5
				6	7

YOU HAVE COMPLETED SECTION 1. PLEASE TURN THE PAGE AND GO ON TO SECTION 2.

## SECTION 2: IN THIS SECTION WE'RE INTERESTED IN THE STORE VISIT WHEN YOU BOUGHT YOUR MICROWAVE.

4. Which one of the following statements best describes why you decided to visit the particular store where you bought? (Please check one response only.)

- I heard they were having a sale.
- The store was closest to my home.
- The store's reputation for quality products.
- A friend recommended the store.
- I knew that the store usually had good prices.
- I knew the store had a wide variety of MICROWAVES.
- The store was close to other stores where I could shop.
- The store had a specific brand that I wanted to look at.
- I was satisfied with my last purchase from the store.
- Other (specify): \_\_\_\_\_

5. About how much time did you spend in that store on the day that you bought your MICROWAVE? \_\_\_\_\_ minutes.

6. Which one of the following statements best describes why you stopped shopping and made your purchase? (Please check one response only.)

- I dislike shopping and wanted to get it over with.
- I almost always buy my appliances at this store.
- I doubted that the model I bought would be available at any other store in Gainesville.
- I doubted that any money I might save by shopping further would be worth the time and effort.
- Other (Please specify) \_\_\_\_\_

7. Was the sales person:

- a man
- a woman
- I didn't talk to a sales person.

8. Was the sales person:

- younger than you are
- about the same age
- older than you are

FOR EACH OF THE NEXT TWO STATEMENTS, PLEASE INDICATE HOW MUCH YOU AGREE OR DISAGREE. THE RESULTS ARE CONFIDENTIAL, SO PLEASE ANSWER FREELY. (PLEASE CIRCLE THE NUMBER OF YOUR RESPONSE.)

- |     |   | Strongly<br>Disagree |    | Strongly<br>Agree |
|-----|---|----------------------|----|-------------------|
| 9.  | The sales person was <u>not</u><br>very knowledgeable.  | 1 2 3 4 5            | 6  | 7                 |
| 10. | I felt that I could trust<br>the sales person's advice.   | 1 2 3 4 5            | 6  | 7                 |
| 11. | Please indicate whether you had ever bought any of the following<br>items <u>from this same store</u> .                       |                      |    |                   |
|     | Camera  | YES                  | NO |                   |
|     | Stereo  | YES                  | NO |                   |
|     | Compact disc player   | YES                  | NO |                   |
|     | Television  | YES                  | NO |                   |
|     | Microwave oven  | YES                  | NO |                   |
|     | VCR   | YES                  | NO |                   |
| 12. | Which <u>one</u> of the following two statements best describes your<br>search and purchase process? (Check <u>one</u> only.) |                      |    |                   |
| ( ) | I relied more on my past experience and knowledge to make my<br>purchase.   |                      |    |                   |
|     | OR  |                      |    |                   |
| ( ) | I relied more on new information I obtained while shopping to<br>make my purchase.  |                      |    |                   |
| 13. | Which <u>one</u> of the following two statements best describes your<br>search and purchase process? (Check <u>one</u> only.) |                      |    |                   |
| ( ) | I relied more on my past experience and knowledge to make my<br>purchase.   |                      |    |                   |
|     | OR  |                      |    |                   |
| ( ) | I relied more on the advice of the sales person to make my<br>purchase.   |                      |    |                   |

YOU HAVE COMPLETED SECTION 2. PLEASE TURN THE PAGE AND GO ON TO SECTION 3.

SECTION 3: THE NEXT SEVERAL QUESTIONS ASK ABOUT THE SOURCES OF INFORMATION THAT YOU MAY HAVE CONSULTED.

14. Listed below are various sources of information which you, or members of your household, may have sought out and consulted before buying your new MICROWAVE:

- a. Under Column (14a) please indicate the number of times that you actually consulted each of the sources.
- b. Under Column (14b) please put an "F" next to the first source that you consulted. (Use only 1 "F".)
- c. Under Column (14c) please put a "U" next to each of the sources that you found useful.
- d. Under Column (14d) please put an "M" next to the one source that you found most useful. (Use only 1 "M".)

<u>INFORMATION SOURCES</u>	Number (14a)	First (14b)	Useful (14c)	Most Useful (14d)
Phone call to stores	( )	( )	( )	( )
Phone call to mail-order companies	( )	( )	( )	( )
Store catalog	( )	( )	( )	( )
Magazine Ad	( )	( )	( )	( )
Friend or Relative	( )	( )	( )	( )
Sales Person	( )	( )	( )	( )
Consumer Reports	( )	( )	( )	( )
TV or Radio Ad	( )	( )	( )	( )
Yellow Pages	( )	( )	( )	( )
Newspaper Ad	( )	( )	( )	( )
Other: _____	( )	( )	( )	( )

15. Listed below, in alphabetical order, are most of the stores which sell MICROWAVES in Gainesville:

- a. Under Column (15a) put a "B" next to the store where you bought your new MICROWAVE.
- b. Under Column (15b) put an "S" next to each store in which you shopped in your new MICROWAVE.
- c. Under Column (15c) put a "1" next to the store you visited first, put a "2" next to the store you visited second, a "3" next to the store you visited third, etc... If you visited a store more than once, please list it each time. (for example, if you visited the same store first and fourth, please put "1,4" next to that store.)

<u>STORES</u>	<u>Bought</u> (15a)	<u>Shopped</u> (15b)	<u>Timing</u> (15c)
Burdines	( )	( )	( )
Consumers Warehouse	( )	( )	( )
Couch's Electronics	( )	( )	( )
K-Mart (23rd Ave.)	( )	( )	( )
K-Mart (76th Blvd.)	( )	( )	( )
Lowe's	( )	( )	( )
Luria's	( )	( )	( )
Maas Brothers	( )	( )	( )
McDuff (Main St.)	( )	( )	( )
McDuff (Oaks Mall)	( )	( )	( )
J. C. Penney	( )	( )	( )
Pic-N-Save (13th St.)	( )	( )	( )
Pic-N-Save (Newberry Rd)	( )	( )	( )
Sears	( )	( )	( )
Service Merchandise	( )	( )	( )
Voyle's	( )	( )	( )
TV and Stereo Town	( )	( )	( )
Walmart	( )	( )	( )
OTHER: _____	( )	( )	( )

16. Listed below, in alphabetical order, are most of the brands of MICROWAVE which are sold in Gainesville. Please circle each of the brands that you looked at carefully before making your choice.

BRANDS

Amana	Avanti	Daytron	Emerson	General Electric
Gold Star	Hotpoint	K-Mart	Kenmore	Litton
Magic Chef	Panasonic	J.C. Penney	Samsung	Sanyo
Sharp	Tappan	Toshiba	Whirlpool	OTHER: _____

WHILE MOST PEOPLE LEARN ABOUT PRICES BY VISITING STORES; A FEW CONSUMERS ALSO USE OTHER SOURCES OF INFORMATION ABOUT PRICES.

- 17a. How many stores, if any, did you call on the telephone to ask about specific prices? \_\_\_\_\_
- 17b. How many stores did you call to ask about the price of the brand that you bought? \_\_\_\_\_
- 18a. How many mail-order companies, if any, did you call on the telephone to ask about specific prices? \_\_\_\_\_
- 18b. How many mail-order companies did you call to ask about the price of the brand you bought? \_\_\_\_\_
- 19a. In how many store catalogues, if any, did you look for specific prices? \_\_\_\_\_
- 19b. In how many stores catalogues did you look for the price of the brand that you bought? \_\_\_\_\_

- 20a. About how many friends or relatives, if any, did you ask about specific prices? \_\_\_\_\_
- 20b. About how many friends or relatives, did you ask about the price of the brand you bought? \_\_\_\_\_
- 21a. From how many newspaper ads, if any, did you obtain information about specific prices? \_\_\_\_\_
- 21b. From how many newspaper ads did you obtain information about the price of the brand you bought? \_\_\_\_\_
- 22a. At how many of the stores that you visited did you check the price of one (or more) of the brands that you already checked at another store? \_\_\_\_\_
- 22b. At how many of the stores that you visited did you check the price of the brand that you bought? (not counting the store where you bought it) \_\_\_\_\_

SECTION 4: THE QUESTIONS IN THIS SECTION ASK ABOUT THE AMOUNT OF TIME YOU SPENT SHOPPING AND HOW YOU FELT ABOUT VARIOUS ASPECTS OF THE SHOPPING PROCESS.

23. We would like to know how much time you and members of your household actually spent gathering information and shopping for your new MICROWAVE. For each of the following activities please indicate how much time, in total, your household has spent since the day your shopping began.

Amount of time spent shopping in stores	0	30	60	90	120	180	240	300 Minutes
Amount of time spent traveling to and from stores	0	30	60	90	120	180	240	300 Minutes
Amount of time spent carefully reading ads	0	30	60	90	120	180	240	300 Minutes
Amount of time reading Consumer Reports (or other buying guides)	0	30	60	90	120	180	240	300 Minutes
Amount of time reading catalogues	0	15	30	45	60	75	90	120 Minutes
Amount of time obtaining information from friends or family	0	15	30	45	60	75	90	120 Minutes
Amount of time calling stores	0	15	30	45	60	75	90	120 Minutes
Amount of time (Other) _____	0	15	30	45	60	75	90	120 Minutes

(YOU HAVE COMPLETED SECTION 3. PLEASE TURN THE PAGE AND CONTINUE WITH SECTION 4.)

PLEASE INDICATE HOW MUCH YOU AGREE OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS. (Please circle the number which indicates your response.)

	STRONGLY DISAGREE	STRONGLY AGREE
24a. Travelling to a store requires a lot of <u>physical effort</u> .	1 2 3 4 5 6 7	
24b. Walking around in a store requires a lot of <u>physical effort</u> .	1 2 3 4 5 6 7	
24c. Overall, a single store visit requires a lot of <u>physical effort</u> .	1 2 3 4 5 6 7	
25a. Comparing the various models in a store requires a lot of <u>mental effort</u> .	1 2 3 4 5 6 7	
25b. Talking with the sales person in a store requires a lot of <u>mental effort</u> .	1 2 3 4 5 6 7	
25c. Overall, a single store visit requires a lot of <u>mental effort</u> .	1 2 3 4 5 6 7	
26a. I really enjoy gathering information before I make a purchase.	1 2 3 4 5 6 7	
26b. I really enjoy visiting stores before I make a purchase.	1 2 3 4 5 6 7	
26c. I really enjoy talking to sales people before I make a purchase.	1 2 3 4 5 6 7	
26d. Overall, I really enjoy shopping before I make a purchase.	1 2 3 4 5 6 7	

(THE FOLLOWING STATEMENTS REFER TO YOUR GENERAL OPINIONS ABOUT THE MARKETPLACE AND YOUR DECISION PROCESS.)

27. The well known brands of MICROWAVE rarely go "on sale" in Gainesville.	1 2 3 4 5 6 7
28. Even when a MICROWAVE goes "on sale", its price usually doesn't change very much.	1 2 3 4 5 6 7
29. Competition tends to keep the prices of the well known brand about the same.	1 2 3 4 5 6 7
30. The price of any specific MICROWAVE model is usually about the same at each of the stores which carry it in Gainesville.	1 2 3 4 5 6 7
31. I prefer to buy products like MICROWAVES at a store where I've shopped before even if I have to pay a higher price.	1 2 3 4 5 6 7
32. As long as I get the MICROWAVE model that I want at a good price, then getting that model at the best price in town really is not very important to me.	1 2 3 4 5 6 7

33. I seem to get more satisfaction than most people from getting the best possible deal on the model that I buy.      1 2 3 4 5 6 7
34. If a store usually has high prices on MICROWAVES, then its "sale prices" will probably also be higher than most stores.      1 2 3 4 5 6 7
35. Even before I began shopping, I was sure about which stores had the best MICROWAVE price in Gainesville.      1 2 3 4 5 6 7
36. In general, the price of a MICROWAVE tells me a lot about its quality.      1 2 3 4 5 6 7
37. It is difficult to evaluate the quality of the various brands of MICROWAVE even after examining them.      1 2 3 4 5 6 7

SECTION 5: THE QUESTIONS IN THIS SECTION ASK ABOUT YOUR ACTUAL PURCHASE. (PLEASE CHECK YOUR RECEIPT, YOUR BOX, OR THE APPLIANCE ITSELF.)

- 38a. What brand of MICROWAVE did you buy? \_\_\_\_\_
- 38b. At how many stores do you think that this brand was available in Gainesville? \_\_\_\_\_
- 39a. What model number did you buy? Model # \_\_\_\_\_
- 39b. At how many stores do you think this specific model was available? \_\_\_\_\_
- 39c. At how many stores did you check (in person, by phone, or in ad) the price of the specific model that you actually bought? (not counting the store where you bought it) \_\_\_\_\_
- 40a. On what date did you purchase your new MICROWAVE: month/day/year
- 40b. What price (excluding tax, delivery, or extended warranty) did you pay for your new MICROWAVE? \$ \_\_\_\_\_
- 41a. Please estimate the lowest price at which this same model will be displayed at any store in Gainesville in the next two weeks. \$ (Please estimate or guess even if you are unsure)
- 41b. Please estimate the highest price at which this same model will be displayed at any store in Gainesville in the next two weeks \$ (Please estimate or guess even if you are unsure)
- 42a. Did you happen to buy your MICROWAVE at a "sale" price? YES NO (If yes): How much was the price reduced? \$ \_\_\_\_\_

- 42b. Did you negotiate a lower price (talk the salesman into a special price deal?) YES NO  
(If yes): How much did he lower the price? \$ \_\_\_\_\_
43. Did the salesman offer (to sell) you an extended warranty on your MICROWAVE? YES NO
44. Did you buy an extended warranty on your new MICROWAVE? YES NO
45. Which of the following statements best describes the price you paid for your new MICROWAVE?  
( ) I think that I paid less than most consumers who bought this model.  
( ) I think that I paid about the same as most consumers who bought this model.  
( ) I think that I paid more than most consumers who bought this model.

(QUESTIONS 46a AND 46b ASK YOU TO ASSUME THAT YOU COULD HAVE PURCHASED THE MODEL THAT YOU BOUGHT FOR LESS.)

- 46a. How much more time would you have been willing to spend shopping in order to save an extra \$40 on your purchase price?  
\_\_\_\_\_ hours \_\_\_\_\_ minutes
- 46b. How much more time would you have been willing to spend shopping in order to save an extra \$20 on your purchase price?  
\_\_\_\_\_ hours \_\_\_\_\_ minutes
47. How much more money do you actually think you could have saved on the model that you bought if you were willing to shop at every store in Gainesville? \_\_\_\_\_
48. How long was it from the time that you first considered purchasing your new MICROWAVE until the time you actually made the purchase?  
( ) Same Day  
( ) Less than a week  
( ) 1-4 weeks  
( ) 5-12 weeks  
( ) 3-6 months  
( ) Over 6 months

(YOU HAVE COMPLETED SECTION 5. PLEASE TURN THE PAGE AND GO ON TO SECTION 6.)

SECTION 6: WE ARE ALSO INTERESTED IN UNDERSTANDING HOW CONSUMERS' SHOPPING PATTERNS DIFFER DEPENDING UPON THEIR PREVIOUS PURCHASE EXPERIENCE, AGE, SEX, EDUCATION, AND INCOME. WE ASSURE YOU THAT THIS INFORMATION WILL REMAIN COMPLETELY CONFIDENTIAL.

49. How many MICROWAVE purchases have you made previously (not counting this one)? \_\_\_\_\_

(Please skip Questions 50 and 51 if you have never bought a MICROWAVE before.)

- 50a. How long has it been since you purchased your last MICROWAVE? \_\_\_\_\_ years \_\_\_\_\_ months

- 50b. What brand was your last MICROWAVE? \_\_\_\_\_

- 50c. At what store did you buy your last MICROWAVE? \_\_\_\_\_

- 50d. How many times did you have your last MICROWAVE repaired? \_\_\_\_\_

(PLEASE CIRCLE THE NUMBER OF YOUR RESPONSE TO QUESTIONS 51 a,b,c.)

	NOT AT ALL	VERY
	SATISFIED	SATISFIED

- 51a. How satisfied were you with your last MICROWAVE?

1	2	3	4	5	6	7
---	---	---	---	---	---	---

- 51b. How satisfied were you with the store which sold you your last MICROWAVE?

1	2	3	4	5	6	7
---	---	---	---	---	---	---

- 51c. How satisfied were you with the repair service on your last MICROWAVE?

1	2	3	4	5	6	7
---	---	---	---	---	---	---

52. How long have you lived in Gainesville or the surrounding area?

- ( ) Less than 1 year
- ( ) 1-2 years
- ( ) 3-7 years
- ( ) 8-14 years
- ( ) 15 or more years

53. Do you (or a member of your household) own a car? YES NO

54. What was your age on your last birthday?

- ( ) Less than 18
- ( ) 18-24
- ( ) 25-34
- ( ) 35-44
- ( ) 45-54
- ( ) 55-64
- ( ) 65 or more

55. Sex:      Female      Male

56. Marital Status:      Single      Married      Divorced      Widowed
- 57a. How many children do you have      0      1      2      3      4      5  
or more who live at your home (or apartment)?
- 57b. How many children do you have      0      1      2      3      4      5  
or more at home who are six years old or younger?
58. Education: What is the highest grade or level of education that you have completed? (Please check one.)
- ( ) 8th grade or less  
( ) Grades 9-11  
( ) High School Graduate  
( ) 1-3 years of college or Vocational School  
( ) Graduated College  
( ) Some Graduate School beyond a four year College Degree

PLEASE REMEMBER THAT THE FOLLOWING INFORMATION IS COMPLETELY CONFIDENTIAL.

- 59a. Are you employed outside the home?      YES      NO  
59b. (If yes:) About how many hours do you work in an average week?  
Approximately what is your hourly wage rate? \$ \_\_\_\_\_/hour
- 60a. (If married)      Is your spouse employed outside the home? YES      NO  
60b. (If yes:)      About how many paid hours does your spouse work in  
an average week?  
60c.      Approximately what was his/her hourly wage rate?  
\$ \_\_\_\_\_/hour
61. Approximately what is your Total Household Income last year  
(before taxes):
- ( ) Less than \$10,000  
( ) \$10,000-14,999  
( ) \$15,000-24,999  
( ) \$25,000-34,999  
( ) \$35,000-44,999  
( ) \$45,000-54,999  
( ) \$55,000 or more

NAME:

ADDRESS:

THANK YOU VERY MUCH FOR YOUR HELP. I WILL SEND YOU A CHECK FOR \$5  
SHORTLY AFTER I RECEIVE YOUR COMPLETED QUESTIONNAIRE.

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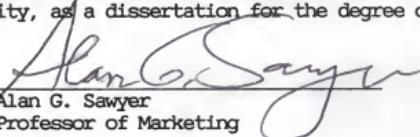
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Howard Marmorstein was born on July 6, 1957, in Philadelphia, Pennsylvania. He received a B.S. in economics from the Wharton School of the University of Pennsylvania in December 1978. He also completed his M.B.A. at the Wharton School in December 1982.

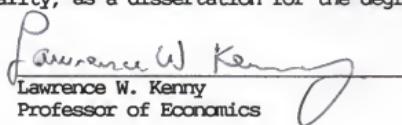
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